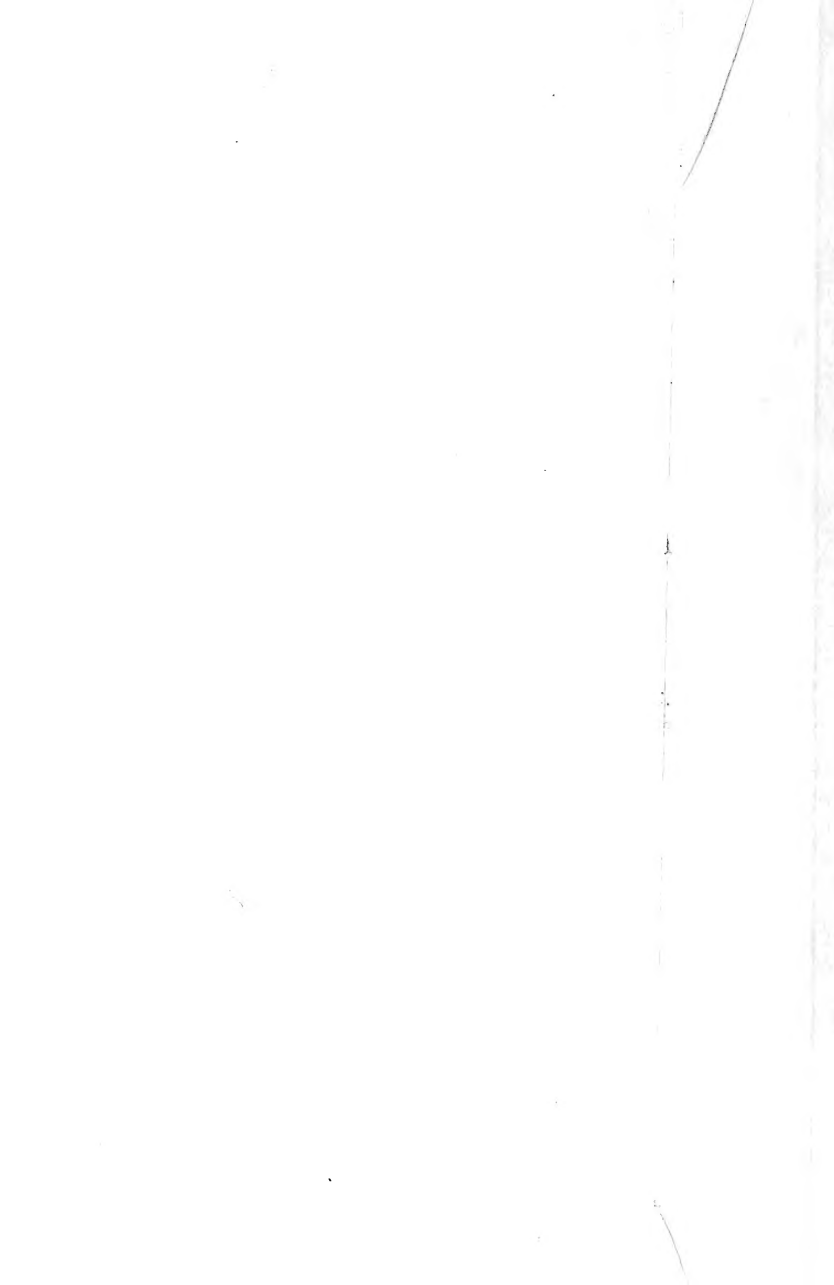


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CATALOGUE

ANNUAL

: 1893 :-

: 1894 :-

AND

MANUAL



ORLANDO NURSERIES,
ORLANDO, FLORIDA.



JAMES MOTT, Proprietor.



GREVILLEA ROBUSTA. (See page 50.)

To My Patrons.



△**E**ARLY orders solicited. In sending early orders, you are surer of varieties and sizes wanted. Cash with order, or C. O. D. by express. In ordering C. O. D., send one-fourth cash with order. Remittances may be made by Express, Money Order, Registered Letter or Bank Draft. Plain and specific directions should be given **how to ship, route, etc.** No responsibility will be assumed by me after proper shipment; on the contrary, it must be distinctly understood that all articles, after leaving my hands in good condition, are entirely at the risk of the purchaser.

I take great care in packing, and with reasonable handling my packages will endure the longest journey in perfect safety. I am careful that stock shall be true to name. In case errors should occur in labeling, I will replace any trees thus wrongly named, or refund the price; but this guarantee is to go no farther, and we so mutually agree. I do not give any warranty, expressed or implied. To guarantee would make me liable for your carelessness; therefore, all complaints must be made within ten days of receipt of goods. The many years' experience I have had in handling trees tells that I know how. No charge for packing and delivering trees at railroad depot or express office. Correspondents will please write their post office, county and state as plainly as possible.

To all wishing to plant trees, I am glad to give all the information I am able to do regarding their culture, in the many important points that most of our planters, not having made it a study, are unacquainted with. My trees will be ready to go out December 1st.

Referring to "Profits," my idea is to get my profit from the unusual growth, and not from the low prices at which I shall sell.

I appreciate your past trade, and want more of it, and realize that it can only be secured and held by fair treatment and good goods.

Very truly yours,

JAMES MOTT,

Orlando, Florida.

November, 1893.



JAMES MOTT,
Proprietor Orlando Nurseries.

HISTORY OF THE ORANGE.

BITTER ORANGE (*Citrus vulgaris*).

Its origin, as to any one special country, is somewhat in doubt. One writer says: "There is every probability that the eastern region of India was its original country. Sir Joseph Hooker saw the bitter orange, certainly wild, in several districts to the south of the Himalayas, and Garwal and Sikkim as far as Phasia," and it is thought the same orange is wild in Cochin China and China.

The Crusaders saw the bitter orange tree in Palestine. It was introduced into Spain by the Arabs, and likely also into the east of Africa. The opinion generally prevails that we are indebted to the early Spanish settlers or explorers for its introduction into this country, where we now find it growing wild from well South in Florida to as far North as Brunswick, Georgia.

SWEET ORANGE (*Citrus aurantium dulcis*).

Its history would make it of later introduction and culture than the bitter-sweet orange; in its wild state it is not found over so large a section. De Candolle says: "From collected facts it seems that the sweet orange is a native of China and Cochin China, with a doubtful and accidental extension of area by seed into India."

Up to the fifteenth century Arabian books and chronicles only mention the bitter or sour orange. However, when the Portuguese arrived in the islands of Southern Asia they found the sweet orange, and apparently it had not previously been unknown to them. Writers in the beginning of the sixteenth century speak of the sweet orange as a fruit already cultivated in Spain and Italy, and as we find it (but not often) in a wild state in our hammocks, it is presumable that it was brought to us also from Spain.

MANDARIN ORANGE (*Citrus aurantium nobilis*).

This was new to European gardens at the beginning of the present century. According to Kurz, the species is only cultivated in British Burmah, and from best information its area is restricted to Cochin China and a few provinces of China.

THE SHADDOCK OR GRAPE-FRUIT (*Citrus decumana*).

Its culture has been extended over a very wide range of country, often in a wild state. One naturalist (Seeman) says: "It is extremely common about the Fiji Isles, and covering the banks of the rivers." De Candolle says: "In China the species has a simple name, Yu, but its written character appears too complicated for a truly indigenous plant." It is said to be common in China and Cochin China, and that in the islands to the east of the Malay Archipelago the clearest indications of a wild state are found.

"Shaddock was the name of a captain who first introduced the species into the West Indies." The names pomelo and grape-fruit are more than likely local names given it since it came to Europe. Pome is the name of any fruit, the inside of which is divided. Webster says, "a fleshy or pulpy pericarp," which is very marked in this fruit. The name grape-fruit likely comes from the form the fruit takes on the tree, being produced in clusters, often twenty or more of the fruit in a bunch; it is surprising the loads of fruit this tree will produce. There are three distinct forms, though, while they are all shaddocks, the names of them somehow have become divided; the larger form is called pomelo, then shaddock, and the smaller strain grape-fruit. One is called pink shaddock, from the red color, both of skin and fruit. I am at a loss to know whether this was one of the distinct forms imported by Capt. Shaddock, as De Candolle, in his "Origin of Cultivated Plants," makes no mention of it. While I have no data, I think its introduction is later than that of the orange, as in no case have I found the grape-fruit wild, which is the case with both the sweet and bitter-sweet oranges.

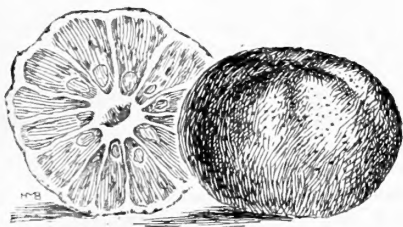
There have been several importations, since the real settlement of this country, from India and other sections, but in no case have I found them to be improvements over those first introduced. There have been, however, very decided improvements of our own origin in the last decade. The form in some instances has become somewhat changed; the size less, skin thinner, with less seed and rag, and the quality changed from the pungent acid of the old form to that of a "delicious," sweet fruit. All of these, so far as I have seen, are chance seedlings, and some of them, after it was found they were better, have been more or less preserved by budding.

I am very much inclined to the belief that often they are accidentally crossed with the orange. One I might mention, the *Aurantium-*

pomelo, as the name implies, partakes of both the sweet orange and the shaddock. It is said to have been an orange seed that produced it. The trees take the form of the orange, while the fruit is produced in clusters; in form not quite so much flattened, but it is that of the grape-fruit. In quality, to many tastes, it is superior to the orange. The bitter principle of the shaddock is somewhat retained, but it is covered up with the sweets and acids, and so nicely blended that it makes a fruit more rich, with a decided tone over that of the orange.

Should I attempt to account for these changes that have come since its introduction to this country, it would be speculative, yet, I believe, correct. Our very peculiar climate, that I know in other instances has brought about pomological changes that scientists of other sections have told us could not be, has caused this remarkable fruit to become crossed with the orange, until in it we have not only the health-giving principle of the parent grape-fruit, that is so highly spoken of by our best physicians, but the luscious sweet orange of Florida.

In the markets for our oranges there is a rapidly increasing demand for the common grape-fruit, and I can but believe that with the introduction of these improved varieties, the demand will so increase that it will become more sought after than our famed orange.



SHORT HISTORY OF THE PEACH.

All the authors on the peach I am acquainted with assume that the peach is a native of Persia. Long lists of varieties are given, nearly all of American origin, except that the late A. J. Downing mentions having procured the Chinese Cling, Honey and Peen-to from China. The facts are, the peach is found wild in Turkey, Persia, Afghanistan, northern India, and all over China; and this accounts for the different strains in use in our country. Each section has had its peaches that were adapted to that particular climate, and when taken to another country of similar climate, the peach is quite a long-lived tree. The peach first in use here is said to have been taken from Persia to Italy, and thence over Europe to our country. Then the Spanish peach, that is, presumably, from Turkey to Spain, and from there through the Carolinas to Florida. Again, the old Indian peach, that came from Mexico up through the Mississippi Valley, is, more than likely, a different strain of the peach from Turkey.

Then the Chinese Cling, we believe from northern China, the Honey from middle China, and the Peen-to, which is the peach found wild by Atchison, from southeast Afghanistan, from there to China. The Spanish peach was first to come into use in Florida with the advent of the first settlers, and while peach culture has not proved very successful in Florida, yet better results have come from the old Spanish peach than all others, until the Peen-to came. This peach, in very many respects, is entirely distinct from all the other strains—it is a perennial tree from a tropical climate; hence its adaptability to our climate of Florida, more especially the southern part of the state.

All others seem to have come from a colder climate. There is something in their physical organization that requires a lower mean temperature than we have here, and conversely, the Peen-to is of no value in sections of much cold.

CITRUS FRUITS.

TIME TO PLANT.

While, as is often said, we can plant an orange tree here in Florida any day of the year, yet some days are better than others. All trees are best transplanted at a time when they are having a season of rest; and if we can catch the time when that rest is about over, and the tree is just ready to burst out into a new life, that is the best time to plant. I like winter planting, provided it is done early enough—so the tree is at rest, and it may get the benefit of our winter rains. But to wait till spring, with the rapid growth on, and often our spring drouth about ready to set in, is, I consider, the poorest season of the whole year. I have had fine results in planting after the spring growth had stopped and the rains were beginning, and new growth just ready to start. Further than this I cannot give any general instructions, only never to allow the water even to be dried off the roots of an orange tree. Never leave roots, even for a few minutes, exposed to sun or air. A large portion of our trees are killed or permanently injured through the ignorance of the man that plants. Not only are roots dried up, but a little hole is dug and roots crooked around to fit it, and the tree ruined for all time.

I only propagate a few of the best known varieties, believing a dozen varieties of those that are best is better for a money crop than a list that takes all of the different kinds that may have their advocates. The supply of orange trees is limited. The demand at home is much greater than before in five years, and prices here given are subject to change after January 1, 1894.

✓ AURANTIUM POMELO.

Is a chance seedling, originating in Orange county, from an orange-seed procured from the noted Dummitt orange grove on Indian river. Is as much orange as grape-fruit—a hybrid beyond question. The most valuable acquisition to the citrus family yet grown. Fruit smaller, skin thin, less rag (or core); in quality sweet and very fine, with just enough of the bitter principle to prove that it is of the grape-fruit. The past winter the fruit sold in Chicago, netting the grower \$2.30 a box, while his common grape-fruit, same consignment, brought \$1.20 a box. As it comes more into use, I shall expect to always out-sell *any other* of the citrus fruits. It is, therefore, a good thing to plant largely of for profit, and those who plant first will make the most. Extra size trees, 75 cts. each; 2-year buds, 1¼-inch stocks, \$50 per 100.



SEEDLESS GRAPE-FRUIT.

Origin, Florida, from seed of the common grape-fruit, is without seeds, which, together with its thin skin, glossy, smooth appearance, and excellent quality (which is much superior to the common grape-fruit), makes it a very desirable acquisition to our list of citrus fruits. First-class trees, 75 cts. each, \$50 per 100.

HART'S IMPROVED GRAPE-FRUIT.

In general appearance of tree and fruit the same as *Aurantium Pomelo*, in taste not quite so sweet. For people that like an acid fruit without the bitter of the common grape fruit, it is a very defirable acquisition, Trees, first-class, 65 cts. each, \$50 per 100.

DOLLINS GRAPE-FRUIT.

A decided improvement of the common grape-fruit. Trees, first-class, 50 cts. each, \$40 per 100.

COMMON GRAPE-FRUIT.

Trees, first-class, 50 cts. each, \$40 per 100.

KIN KAN, OR KUMQUAT ORANGE.

A native of Japan, hence it withstands more cold than the Asiatic orange. Tree of dwarfish habit, a beautiful, compact head, fine foliage; when in fruit, very handsome; fruit is in clusters, is eaten from the hand without removing the skin, is fine, and much sought after for jams, preserves and pickles. Every one in Florida owning a piece of land should possess it. Trees $1\frac{1}{2}$ to $1\frac{1}{4}$ inches, 75 cts. each. (See opposite page.)

BESSIE'S FAVORITE.

Its many valuable points over all others are, size (200 to the box), thin skin, remarkable productiveness; holds in perfection till May and June. A specimen placed in water sinks, which tells of the sugar it contains—the highest point of excellance in judging the merits of an orange. All combine to make it our most valuable market orange. Trees, 1 to $1\frac{1}{4}$ inches, \$35 per 100.

BOONE'S EARLY.

Of the oranges that have come to us in the last decade, Boone's Early is at the head of the list. It has many points to recommend it over all others. A month earlier than any other; is yellow and fully ripe the 10th of October; small size, thin skin, very little rag (or core); more of them without seeds than with seeds. Very pretty and most excellent in quality, and ripening, as it does, a month ahead of any other, it is doubly valuable. For sections in frost danger, not only for us here in Florida, but for all the Gulf coast country of Texas and Louisiana where oranges are grown, it must prove a valuable find. Trees, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches, \$50 per 100.



KIN KAN, OR KUMQUAT ORANGE. (See opposite page.)

MOTT'S BLOOD.

A late importation from Calcutta, and the finest, so far, of my acquaintance. Small size, smooth, thin skin, showing blood inside and out; very pretty. Very few seeds, with little rag (or core), and most excellent in quality; holds on the tree till May. Trees, one-year buds on one-inch stocks, \$50 per 100. (See page 11.)

SIMMS' SUMMER.

A true *Citrus vulgaris*, found wild in the Apopka Hammock, without the bitter of the common wild orange of our hammocks. Without doubt a cross—the sour orange with the sweet. The tree has the characteristic of being in fruit the year round, and of holding on the tree for months after fully ripe. The original tree now has both green and ripe oranges, and they are picked from it ripe, juicy and deliciously sweet any day in the year.

The fruit is more even in size, a thinner skin than the old one, with less rag and but very few seeds; and for home use, every garden where the wild orange will grow, from Tampa, Florida, to Brunswick, Georgia, and all the Gulf coast sections where oranges are grown, should possess it. It surely must prove valuable as a market variety. Only to think of it—a ripe orange picked from the tree every morning before breakfast the year round! Trees, one-year buds on one-inch stocks, \$40 per 100.

SATSUMA.

This comparatively new orange is rapidly coming into favor. It belongs to the Mandarin class, with its earliness; the tree being more hardy, it is being sought after, particularly in sections of frost danger. Trees, on 1 to 1½-inch stock, 40 cts. each, \$35 per 100.

KING.

Or, as it is called often, "King of Siam." No orange yet grown in Florida can compete with the King as a fancy fruit, and I think it has been sold for higher prices than any other—\$12 and \$15 per box the past spring. It is of the *Citrus nobilis* class (a "Kid Glove"), and with its glossy, highly colored skin, its beauty is most striking. It does not ripen till April, and at its proper season its quality is most excellent. Trees, one-year buds, 75 cts. each.

MANDARIN ORANGE.

Is of the *Citrus nobilis* class, from Cochin China. As a dessert orange is much sought after, from the fact that the skin does not adhere to the pulp, and is easily removed with the fingers, as also the pulp is so divided in sections that they are parted easily, and one has the pleasure of eating a fine orange without losing a drop of the juice or soiling the hands. Trees, first-class, 40 cts. each, \$35 per 100.



MOTT'S BLOOD ORANGE. (See opposite page.)

TANGIERINE ORANGE.

Of the same class as the Mandarin, with its beautiful clear skin, red in color when fully ripe, and a peculiar flavor that is pleasant to most tastes. These "Kid Glove" oranges, as the Mandarin, Satsuma, Tangierine and King are called, are rapidly coming into use, taking the place of the *Citrus aurantium* class. The Tangierine the past season, even during the reign of low prices for oranges, sold for high prices. Trees, first-class, \$40 per 100.

PARSON BROWN.

Termed a Florida orange; its earliness makes it much sought after; next to Boone's Early and Satsuma, it is the most valuable of the early oranges. Trees, first-class, \$35 per 100.

NAVEL.

Riverside Navel carries its trade-mark with it, and is known as a superior orange; it is a very shy bearer, unless when budded to the sour orange or the French lemon stocks. Trees on sour stock, first-class, \$35 per 100.

TARDIFF.

Is too well-known to need a description; its being late makes it so far the most profitable orange. Hon. Dudley W. Adams sold eleven boxes in the market July 2, which netted him, f. o. b., \$10 per box. Trees, first-class, on sour stock, \$50 per 100; on sweet stock, \$35 per 100.

MALTESE BLOOD.

Mr. Thomas Rivers, speaking of it, remarks: "Maltese Blood takes the first rank." Trees, first-class, \$35 per 100.

MEDITERRANEAN SWEET.

One of our most profitable oranges; bears very young and very fully; that one known as Sanford's Mediterranean holding on the tree till late in the season. In my opinion, it stands several degrees more cold than the common orange. Trees, first-class, \$35 per 100.

SOUR ORANGE SEEDLINGS. Once transplanted; very fine. \$5 per 1,000.

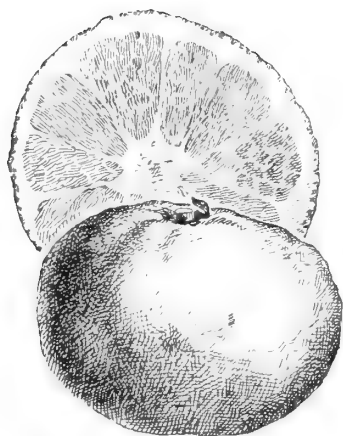
GRAPE-FRUIT SEEDLINGS. Once transplanted, fine trees, 18 inches, \$10 per 1,000. Write for prices on large lots.

CITRUS TRIFOLIATA. Pot-grown, 25 cts. each.

LEMONS.

Belair and Villa Franca. Two-year buds on 1 to 1½-inch stock, \$35 per 100.

Bonnie Brae. It is new to me. I procured the buds from California. To me it seems the finest of all the lemon family. Small size, round, symmetrical; skin very thin; full of a delicate, pleasing juice. Trees, 75 cts. each.



ORANGE CULTURE IN FLORIDA.

There are many different ideas of raising oranges here in Florida, and it seems almost as though each planter is trying to put in practice his own peculiar plan, be it what it may. I often think that the orange will stand more abusive treatment (often "manslaughter in the second degree," not with "malice prepense," but from ignorance of the laws of physical botany) than any other fruit-bearing tree, or we would hear more yet of that oft-repeated tale, "oranges don't pay."

With many, the ground must be kept clean, no grass or weeds left to grow, but all the time kept smooth. The pruning saw and shears play a very important part, and more often in the hands of some one who is as ignorant as a "man-eater of the Nile" of why a tree has roots, why bark and why leaves; entirely ignorant of all the laws of the growth of plants. The tree is trimmed up, and then it is trimmed down; it is "thinned out to let in the sun and air;" the top is opened up for fear there are too many branches; and often when the tree has gone through this whittling away of its life, I will call it, there is but little left of it. All it can do is to try and recover from this murderous attack; but before it gets back again to full strength the operation is repeated, and the man who is so anxious to raise oranges looks on his helpless tree and wonders why it doesn't grow better, and why he gets little or no fruit. As with the case of many planters, his money does not hold out, and he is not able to buy fertilizers, or he uses some cheap stuff that does not manure his trees at all, so starvation sets in, and he finds a serious trouble from that source.

Now, there is a right way, as well as such a multitude of wrong ways, to do everything. We plant orange trees for fruit; it is very seldom they are for shade. A tree has roots, wood, bark, limbs and leaves. They all have their different offices to perform, and all are essential to the strength and vigor of the plant. Each of the little fibrous roots has its little mouth, that drinks up its food from the soil, and it is said that each little mouth has its part of leaf and twig to feed (this I know in part to be true). The sap is propelled upward on the the same principal as is water with a force pump—a certain force for a certain height—increasing as it goes up, until the height is reached beyond which there is not strength enough to send it up farther. The sap, in its watery state, as it goes up deposits whatever solids it con-

tains for the strength of the plant, and the water is thrown off into the atmosphere from one side of the leaf, while the other side is drinking in those elements that come from the air, passing down through the inner bark, depositing its carbon, of which the new wood is formed.

If this be true, can we not see that the lower the tree the easier is the circulation of its sap, and also how essential it is that the tree has all its leaves, not only to draw up its food from the soil, but that it may drink in from the breezes by day and the soft dews by night its carbon and some nitrogen, of which 90 per cent. of the tree is made?

Now, with this not very well written statement, I hope some of my readers will stop and watch results, as my friend, John Harshbarger, of Merrimack, told me he did. (And it was before he got over his tree pruning craze, too!)

On a visit to him six years ago, he said he had something to show me, and we went to see. In pruning a bearing tree, removing the water sprouts, he showed me one that had crept up through the tree so slyly that it had got away from him, and was not seen till it had gone clear above the rest of the tree; it had branched out, was too weak to hold up its weight of leaves, and toppled over. His first thought was to cut it out, but it had got so large that it was a good part of the tree, and he thought best to let it remain. When I saw it there were 128 oranges on this two-year-old water sprout! From that time he has pruned less and less till. I guess, now he has got where many of our most practical growers have—not pruning at all.

DISEASES OF THE ORANGE.

This, to us in Florida, is an important question. Did I feel myself able to handle it intelligently, it would take a larger volume than this little pamphlet, and I will briefly hint at some of the diseases that are now making so much trouble with our planters. While the ideas I propose to advance are original with me, I hope the reader will not think I am assuming too much, but search it out, as I am trying to do.

The orange is a tree; in no sense can we call it a shrub. Often we find it here in our own state two feet or more in diameter; and what a beautiful grand tree! With its branches often sweeping the ground, its countless little twigs and leaves of glossy appearance: and when laden with fruit (12,000 oranges on a single tree, as has been produced in this section), is it not most valuable, and worthy of our careful attention?

It is said there are trees in India that are known to be over seven hundred years old. I know cultivated specimens that are seventy-five years old, and of those wild in our hammocks, I have thought some to be two hundred or more years old. The student of physiological botany knows, without question, that a tree of such age and size does not belong to that class of plants called shrubs, and that the only way it can be made a dwarf of, is to graft it on the trifoliata, or place it in a pot where the roots are confined, and then it is comparatively short-lived. I must believe the close planting that we often see in groves (15 by 20 feet, or 15 feet apart) can only result, as I have seen, in a short life to the tree. When we thus go so contrary to all natural laws in making this large, majestic and long-lived tree become a dwarf, it is only a question of time that it becomes diseased, and death comes in.

The great scientist, Liebig, once remarked: "Soil does little else than hold trees and plants upright in place, while air and moisture feed them." The tree must have room according to its size; no matter what it is we plant, there must be soil enough to hold "it upright in place." The pasture—feeding ground—must be large enough to hold the drink and food supply; the roots must not come in contact with each other, and the branches need plenty of room to reach out and drink in the elements the free air so lavishly furnishes. I measured a tree in a grove twelve years planted, in this county, not long since, that had a spread of 31 feet, and yet those limbs are reaching out. Dudley W. Adams has on his grounds a tree with 35 feet spread of limbs, that is only sixteen years old; and to tell me that if we want our trees to bear oranges, and continue for our children and their children, we shall plant 20 or 25 feet apart, is to say to me that I have learned nothing in my long life's study of the laws that govern these things.

I might mention the first grove of my acquaintance, that was planted for profit fifty-three years ago. Trees were set 21 feet apart. It has been a very profitable investment, turning off thousands and thousands of dollars' worth of oranges annually since I have known it; now it has foot-rot, and is nearly dead. Now, I must believe that had those trees been planted far enough apart, so that there was soil enough to "hold them upright in place," and that the limbs could have reached out as far as their nature chose, so there would be plenty of room on all sides for our winds to circulate, bringing with them the food of plants, they would not now be nearly dead with foot-

rot, and that with intelligent culture they would have lived on and on—likely outliving generation after generation. Some planters are planting 40 and 50 feet apart. I have never found any old, isolated tree, or those wide-planted, with foot-rot. On the other hand, I have found many instances of this trouble in clumps of closely-planted trees. Often it would seem to break out in all at the same time. To me it seems to come from diseased sap, a weakened condition; as an M. D. would put it, low vitality, impoverished condition of the blood, as in the case of hives, shingles, or St. Anthony's fire. I have found it breaking out up along the trunk of the tree, the bark blistered and sap oozing out.

Foot-rot is the most perplexing question the grower has to contend with. Trees are subject to it in all sections where the orange is grown. Soil I must believe has much to do with it. We do know that some soils are much better suited to the orange than others that we often see trees planted upon. It is also true that for some soils the bitter orange (*Citrus vulgaris*) is less subject to foot-rot than the sweet orange (*Citrus aurantium*). I argue from the fact shown in a former page, that, as it is found wild over a much wider range of country than the sweet orange, it is a more hardy tree. I have thought where trees were deeply planted they are more subject to this disease, and I do believe it the better plan to so plant and cultivate that the crown roots as they enlarge show some above the surface.

The so-called Florida Rough Lemon ("French Lemon") is much in favor as a stock for budding. The tree is found now wild in the hammocks of south Florida. I have found it on the lowlands and some of the most frosty spots in the south half of the state, and I am believing it as hardy as the sweet orange to withstand cold. It is often confounded with the Florida Everbearing and other lemons, none of which are suitable as stocks. It is a very vigorous grower, and trees budded to it come into bearing young; and there is something, I regret I cannot say what, that causes all trees budded upon it to bear better than when budded on either the bitter or sweet orange or grape-fruit. The shy-bearing Navel never fails to become a productive tree on the Florida Rough Lemon. I have not seen it affected with foot-rot, yet I have not seen enough of it to justify me in saying that it does not have it.

Blight, that latterly is causing so much trouble, I believe is from the same cause. I have thought the soil was to blame for it all. The

roots seem to find something that is not food for an orange tree. The tree may grow and do well for years, and yet when the time comes that the tree has taken up more of this poison than it can throw off, this "dry wilt" comes, and once a tree has it there is no cure. I have never seen one recover. True, I have seen trees where the diseased portion was taken away, and it seemingly recovered; but, though it may have gone on for a dozen years, looking pretty well, it never again produced a crop of fruit. The next tree to it in the grove, perhaps, we may find in perfect health. This condition I have found more particularly on shell hammock, or lands where the under soil was on Coquina rock.

Die-back is from some poisonous substance in the soil. It is thought that too much ammoniated fertilizer causes it often, but there is little trouble from that source. Remove the cause, and the cure comes; but where it is from some of the lower salts of iron in the lower soil, the remedy is to adopt a system of culture that will let the roots come up out of it; not plow or harrow at all, but mulch the ground with straw or any litter that will keep it loose and moist. I have known trees badly diseased—almost to death—recover fully by this treatment.

Trees, like animals, will often adapt themselves to very unfavorable conditions. The idea prevails that an orange tree needs, must have, a tap-root well down in the soil; yet I have taken up bearing trees that were quite healthy, and not a root in the soil over 8 inches.

FERTILIZING.

Here is a very important matter, if the planter expects to succeed, that needs well looking into—one that cannot be neglected. Our soil in Florida is lacking in humus, in potash and in everything, I may as well say, that plants take from the soil; and the planter who starts out with the idea that it is entirely lacking in them all, and acts from that standpoint, will not go far wrong. He must inform himself what is the food of plants. "Bone, blood and potash contain all the elements that plants take from the soil." The soil should contain from five to seven per cent. of humus, that acts as a base for our fertilizer; and, as ours contains at best only one per cent., it is essential that by the application of muck (peat) or anything that will be converted into vegetable matter, the soil may be all the time built up.

The properties of blood (ammonia) we may get from other sources.

Cotton seed meal, nitrate of soda or sulphate of ammonia will supply it; and the properties of bone we find in other material; and the potash may be pure or in the form of sulphates; but they *must* all come from some source, if we expect the best results, for I really think a farmer might better deny his hog the corn it takes to lay on fat, than to starve his orange tree. And here let me tell of a late occurrence:

Visiting a noted and very successful orange-grove man, he put the question: "If you were working ten bearing trees for a premium of \$1,000 at the end of five years, and I was competing against you, what would you do?" I said: "I would have to look at my patient before I could prescribe." "Oh well, ten trees on common pine land, say they are now in good condition." I said: "I would get four pounds of sulphate of potash, and eight or ten pounds of fine bone meal, and put it on, and if I thought they needed more nitrogen than was in the bone, I would put on three or four pounds of cotton-seed meal, and watch results; and as fast as a tree showed it could use it, put more on, likely three or four times during the year."

There was nothing more said on that point till a walk down in his grove, which was a beauty, sure; no "opening up the top" there. The trees had all their leaves—great, large, dark-colored ones—showing what some would call "intensive fertilizing," and the oranges were there, too, loads of them. I remarked: "You are doing it to them, sure. You don't believe in starving trees any more than I do. What have you put on? He replied: "Just what you said you would, and in about the same proportions."

I wish I could say it here in this little work plain enough that all our planters could steer clear of the many humbug fertilizers that are furnished us; their name is legion. I am honest in saying that I have seen some of our so-called fertilizers used on orange trees, that instead of acting as food for the tree, injured it; for the life of me I cannot conceive what can be their constituents. One I remember was made of something like an ingredient of Josh Billings' soup, that "made the soup better when they did not put any in."

These fertilizers are largely advertised. Flaming hand-bills and catalogues are sent out. One ignoramus went so far as to say in his catalogue one season, that an orange tree did not require ammonia, that it injured the trees, and his special fertilizer did not contain any, and I guess in the latter remark he told the truth.

Again we see marked on bags and barrels, "Special Orange Tree Grower," "Special Orange Tree Food," "Special Potato Manure," "Special Pineapple Food," all of it misleading just to make us ignoramus believe that an orange, peach or pear tree, as also a grape vine or pineapple plant, did not all use the same food, if it was in reach. They must all have ammonia, phosphoric acid and potash; there is no special business about it. For my use it matters not what I am to apply it to, I want a fertilizer that contains all the elements that plants take up from the soil. As Liebig remarks: "We must create in our soils an artificial atmosphere of carbonic acid gas and ammonia."

Phosphoric acid and potash are dormant elements, and have no action without ammonia in some form to "create this carbonic acid gas." Potash is not only an important element in all farm crops, but if we expect our oranges to come to perfection in sweetness, and that they shall be thin-skinned and bright, they must have a sufficiency of potash.

Tobacco stems are an excellent fertilizer; the coarse, heavy stems are the best. They are largely (9 per cent.) potash, some nitrogen and phosphoric acid, and as it has once been taken up by the plant, it is in just the proper condition to return again to plant life.

Many of our most successful orange growers are following the plan of so treating the old bearing grove that it conforms to nature as near as may be, and are gathering leaves of the forest, old rotten wood, twigs and limbs of trees. One large grower of my acquaintance I have seen cutting small oak trees—what is termed second growth—cutting it up into convenient lengths for hauling, and placing under the trees. All such wood and rakings of the forest decays quickly, and not only holds moisture and adds humus to the soil, but the nitrogen that comes down with the rains, as also the dews of night, are retained, and in that way go into the soil, to its great benefit. Under conditions of clean culture, the first rays of the morning sun drive it back into the air from whence it came.

There are so many conflicting ideas of orange culture that to find out the best way must be a very perplexing question for the new-comer to solve. Yet, as I have said in another chapter, there surely is one best way. If the grower of moderate means expects to keep in the business, he certainly must not use more money in growing his oranges than they will sell for in the market. Maybe he is using more money in pruning, plowing, harrowing, cultivating and hoeing, never allowing soil or tree any rest; and to make up for this wear and

tear of the soil, and tree as well, to great results, three or four times as much manure has to be used as with the grower I mentioned as trying to draw all he can from mother nature. The one in his abuse of nature's laws, has lost money, and the other is adding to his bank account. This is no overdrawn tale; I am noting these two extremes in actual practice. I can point to a grower that takes a deal of pride in his orange grove, that I do not believe has ever made him an orange t at did not cost, on the tree, five cents; while with the other, his expenses do not exceed that amount a box on the tree.

In all our country the practice with farmers is to bring up worn-out lands with some soiling crop. In northern sections, red clover, on lands not too far worn down to produce it, is the best for that purpose; with the South, where red clover is not naturalized, the cow pea is named "the clover of the South;" and on all calcareous soils it is a most excellent soiling crop; but I do not find it so on our sandy soils. I cannot even make myself believe, that with the thousands of acres of cow peas I see grown every year in Florida (for the purpose of enriching the soil), I have ever seen the soil benefited in any way by it; but I am very certain, indeed, that such soils are lastingly injured by it.

I think I am safe in saying all our sand soils (and the farther South the more) are infested with the "anguellula," a parasite that is the cause of "root-knot" of plants. It fastens itself to all succulent-rooted plants to propagate itself. The cow pea, as is also the common garden pea, is one of those plants, and where a crop of either is raised, I have thought there are millions of this very troublesome pest left, where there was one before; and when once in, it is there to stay. The land is thus made unfit for many trees and plants we may be desirous of raising. Especially is it ruin to the fig and peach trees, as also hibiscus, roses, oleanders, and many other plants.

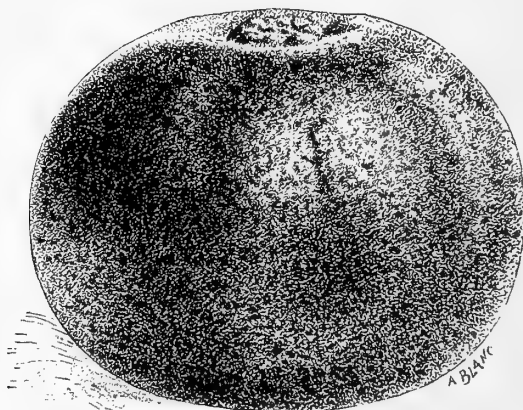
Professor Niel, in some of his writings, says it injures the roots of orange trees. I myself have found it fastened on orange roots. I am a great believer in soiling crops in our orange groves—crab grass, sand spurs—anything to mow down and rot, or let die and fall down to plow under. I am a believer in begger weed for orange groves; it is rapidly coming into use. I do not think it a good plan to plow under any crop while green. In its decay it generates a gas that is injurious to plants; especially is it so if trees are small.

Number of Trees and Plants to the Acre.

4 x 4 feet	2,722	13 x 13 feet	257
5 x 5 "	1,742	14 x 14 "	222
6 x 6 "	1,210	15 x 15 "	193
7 x 7 "	888	16 x 16 "	170
8 x 8 "	680	17 x 17 "	150
9 x 9 "	537	18 x 18 "	134
10 x 10 "	435	20 x 20 "	108
11 x 11 "	360	25 x 25 "	70
12 x 12 "	302	30 x 30 "	48

Proper Distance to Plant.

For Orange trees	40 x 40 feet.
" Peach trees (in Florida)	25 x 25 "
" Grape vines	8 x 10 "
" Pear trees	30 x 30 "



TANGIERINE ORANGE. (See page 10.)

PEACHES.

My trees are all June buds, finely grown, extremely well-rooted, CLEAN and PERFECT in every part, and will make a better orchard tree than those that have been kept in the nursery one and two years. All Florida-grown, and guaranteed to be free from root-knot.

PEACH CULTURE IN FLORIDA.

Ten years ago but little had been done south of Jacksonville with peaches. Planters had often tried growing them, but with the exception of a few seedlings that were found with the old settlers, they were pronounced an entire failure.

About twelve years ago the Peen-to came to us, which turned out to be a success where others had previously failed. Being something of a student of physiological botany, my attention was soon turned to this question of failure in one case and the entire success of the other. I suspected it came from a want of adaptability of those that had been previously planted, while the Peen-to seemed perfectly naturalized to our peculiar climate, and I undertook to find out why the difference. I expected to find out that the opinion which so generally prevails—that we are indebted to Persia for all our peaches—was not true, and that the different strains in use here in America had had their origin in as many different sections. I found the task a very arduous one. I not only found that “the peach is a native of Persia,” but of Turkey, northern China and northern India, as well as Afghanistan, and that the Peen-to is found wild in the tropical part of that country, a perennial tree “of evergreen foliage,” with “peculiar-shaped fruit,” as Atchison says of it. This accounts for its adaptability here.

I also found that the peach so long in use here and best suited to our climate, previous to the advent of the Peen-to, is of Turkish origin, from that country to Spain, being brought to us by the early explorers of that country, and known here as the Spanish peach.

It was said of the Peen-to that it would not cross with the other peaches; that with its many changes from Afghanistan to China and to Australia, and then to us, when the seed was planted it came true—that same “peculiar-shaped fruit.” (In Florida there often come pomological changes that the best of us cannot account for—changes that scientists do not mention as coming in other sections; but they do come, and our climate, which is so peculiarly different from that of any

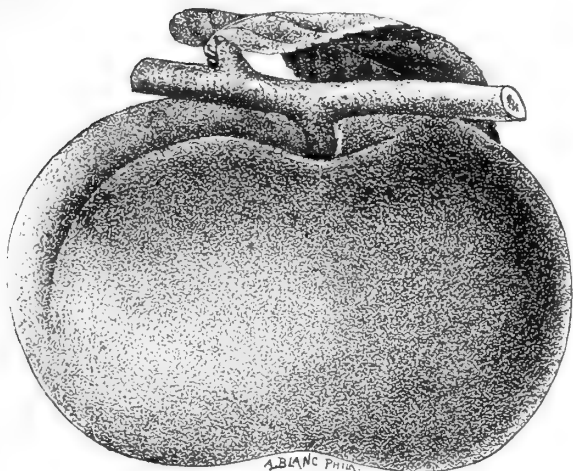
and all other countries, is the cause of them.) And now from this Peen-to peach, when the seed is planted, it is seldom that the fruit comes in shape a Peen-to. I have also, in several instances, found the form to change in the fruit bud, and flat and round peaches on a bearing Peen-to, on the same limb.

There has been quite an interest taken in planting these new varieties, that are now, I may say, a part of us; in many instances with gratifying results, while in others the reverse is true. The failure to grow the fruit in all cases has come from the improper selection of the ground to plant, or neglect after planting. My own experiences have been, as also from the many trees that come under my observation, that if a peach tree is properly cultivated and plenty of plant food given it, that it will be as long lived here as in any other section.

We find there is a deal of trouble from the so-called root-knot parasite—a troublesome pest that gives more or less trouble to the peach tree in all sandy soils, from Michigan here; and the remedy comes, first, in not planting the land to cow peas or any other succulent-rooted plant that this parasite makes use of to multiply in; and second, to manure the tree well all the time, that it may have strength to overcome this troublesome enemy. The planter must bear in mind that the physical structure of the peach tree is such that its leaves are small and very thin, and it is one of those plants that are called “soil-feeders;” that little of its real food comes from the atmosphere, very much less than the orange; and that it must be well supplied with potash, as well as with those elements necessary to make large, dark leaves and rapid-growing wood.

Of the varieties to plant, use none of the Persian or Chinese types, and none of the Spanish strains, unless their origin is as far south in Florida as you desire to plant. There is also a difference in the stocks we nurserymen use for budding our trees upon. This old Spanish peach, from the fact that it is a stronger-growing tree than the Persian peach, is much preferred as a seedling; and it is a demonstrated fact that trees that are grown by our nurserymen at home, when that stock is used, make a much better and longer-lived tree than those that come from where the Persian stock is in universal use.

I have found it a good plan to prepare the ground by putting in the hole well-decomposed muck (a barrel to the tree), and if it can be manured after, fine ground bone (five pounds to the tree) and two pounds of sulphate of potash once or twice during the season, culti-



MOTT'S FREE PEACH.

vating the tree well by plowing three or four times during the year. With this treatment I would expect my trees to be strong enough to overcome disease, and to produce good crops of fruit.

The past season I have used Kentucky tobacco stems, with excellent results, 12 to 15 pounds to the tree in January, well worked into the soil. My fruit was very fine, and the trees are pictures of health.

I think one of my worst horticultural failures has been in trying to make a peach tree for our Florida farmers to plant that would withstand that old curse, "peaches are no good here in Florida," at the time they are planted and left to take care of themselves afterward. In its nature a peach tree at best is short lived; but with the treatment they usually get here, they are short lived indeed; and when the dead tree is taken out it is found that root-knot has killed it—starved it to death. If a proper selection of soil is made (new land), and trees are taken care of as I have directed, there will be no trouble from root-knot or any other disease of my acquaintance.

I have discarded peaches on any other but peach roots. I used to

make them on Marianna plum roots, but I found that with this neglect I have mentioned, they starved out sooner than if on peach roots.

✓ **Lottie.** A seedling of Peen-to. Originated with W. A. Marsh, near Orlando. One of the earliest and most productive of the Peen-to strain. An oblong peach, highly colored with carmine; flavor excellent, with less of the bitter of that family of peaches than any other clingstone. Trees, 3 to 4 feet, 25 cents each, \$20 per 100.

✓ **Peen-to.** Is so well known that it needs no description. Trees, 3 to 4 feet, 20 cents each, \$10 per 100.

✓ **Bidwell's Early.** Tree vigorous and very productive; fruit good size; color beautiful carmine; semi-cling. In quality it is rich, melting, juicy and sweet. Ripens May 10. Trees, 4 to 5 feet, 20 cts. each, \$2 per dozen, \$15 per 100.

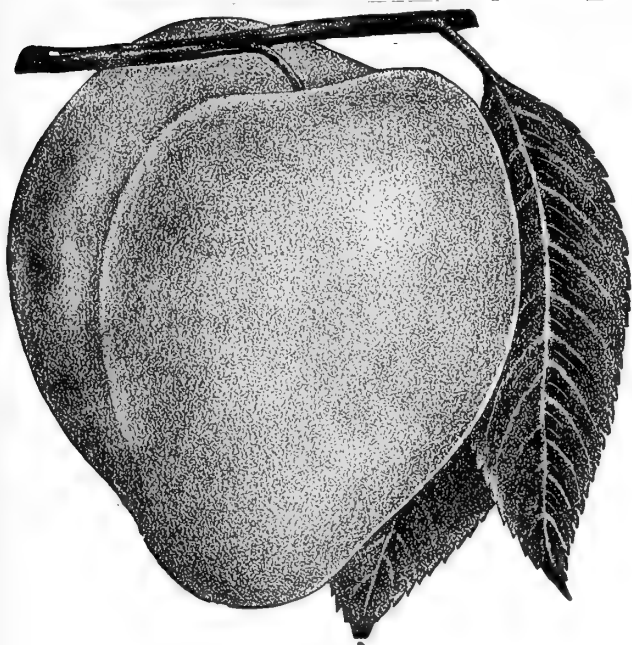
✓ **MOTT'S FREE.** A seedling of Peen-to; origin, Orange county, Florida. It resembles its parent Peen-to in appearance, but is finer in quality. Ripens with the old Peen-to, and is a perfect freestone; what we have so long sought after here in south Florida—an early freestone peach. Trees, 3 to 4 feet, 25 cts. each.

✓ **Waldo.** A seedling of Peen-to. Of good quality; size rather small; very productive; a freestone. Trees, 3 to 4 feet, 20 cts. each, \$15 per 100.

✓ **Maggie and Yum-Yum** are both seedlings of the Peen-to, but are so nearly identical with Bidwell's Early that it is hard for me to tell them apart. Trees, 3 to 4 feet, 20 cts. each, \$15 per 100.

✓ **Angel.** A seedling of Peen-to; an excellent freestone peach. ripe in July. Trees, 20 cts. each, \$15 per 100.

✓ **Bidwell's Late.** About same in size, a little more round and some less color than Bidwell's Early, which it resembles in taste and texture. Striped with carmine on a yellow ground; pretty. A remarkably good shipper, and will be one of our best for distant markets. My last assorted sales, made July 2, 12½ bushel-crates brought me net (after express charges and commissions were taken out) \$30.85. The cost of crates, gathering, packing and hauling to railroad is 80 cents per bushel, leaving a net on the trees of \$4.41. Trees, 4 to 5 feet, 20 cts. each, \$2 per dozen, \$15 per 100.



KELSEY'S JAPAN PLUM.

PLUMS.

The past (or I will say present) season has again demonstrated that some of the plums from Japan are as sure to give us crosses of fruit here in Florida as in other fruit-growing countries. The Kelsey seems the most promising so far, and in all sections of Orange and Lake counties where the trees have been properly fertilized, they have given good crops; and in many cases I have seen the trees bending to the ground with their wonderful loads of fruit. I am sorry to know that often, for the lack of manuring, there has been no fruit.

	Each
✓ Kelsey on Marianna Stock. 4 feet	\$0 25
✓ Satsuma, or Blood. 4 feet	25
✓ Botan. 4 feet	25

JAPAN PERSIMMONS.

Triumph. Origin near Sanford, in Orange county, Florida, from seed from Japan. Its quality is of the best: size medium; tomato-shaped; a pretty carmine, on a yellow ground. Very productive; the past season the crop from a single tree brought \$16. Ripe in October, and holds on the crop until January. Tree, 3 to 4 feet, 40 cts. each, \$3.50 per dozen, \$25 per 100; 2 to 3 feet, 35 cts. each, \$3 per dozen, \$20 per 100.

Col. Church. A tree found with Col. Church near Orlando; a very fine fruit; in size the largest of my acquaintance; single specimens often weigh over a pound. Trees, 3 to 4 feet, 40 cts. each.

Hyakum. Large; deep red in color; keeps very late. Trees, 3 to 4 feet, 25 cts. each.

Kaurokume. Slightly oblong; an old standard sort. Trees, 3 to 4 feet, 25 cts. each.

QUINCES.

Chinese. Fruit very large, often weighing over two pounds. Not so good in quality as our old European quince, but its large size and adaptability to our climate make it very valuable. Trees, 3 to 4 feet, 50 cts. each.

Champion. A superior quince; fruit large and fine. Is somewhat new and rare. Trees, 3 to 4 feet, 40 cts. each.

PEARS.

Le Conte, so far, stands at the head of the list for successful culture. A peculiarity of it is, that it will only do raised from cuttings; in other words, on its own roots. Trees, one-year, 4 to 5 feet, 25 cts. each, \$15 per 100.

Kieffer. It is from the Sand pear of China, and adapted to this climate. The best pear for this section. Grafted on Le Conte, it fruits very young, trees four years old breaking down with their heavy crops. Trees 4 to 5 feet, 30 cts. each, \$3 per dozen, \$20 per 100.

 Special rates on large lots.

MULBERRIES.

Chas. Downing. 35 cts. each.

APRICOTS.

DeLand. A chance tree that has fruited six out of seven seasons with Geo. Woodward, near DeLand, in Volusia county, and has fruited with me the past season; a valuable acquisition. Trees, 3 feet, 50 cts. each, \$5 per dozen.



JAPAN MEDLAR.

JAPAN PLUMS.

Medlar. One of our most valuable fruits; the fruit when canned holds its rich flavor equal to that taken fresh from the trees. Trees, 3 feet, 25 cts. each; 5 feet, 50 cts. each.

GUAVAS.

Cattley, Red and Yellow. Plants three years old, 20 cts. each. \$2 per dozen, \$15 per 100.

FIGS.

Sugar or Celestial. So far the best of many varieties that have been tried in Florida. Fruit small, very sweet—so sweet that they are eaten without peeling. They often preserve themselves on the tree. 40 cts. each, \$4 per dozen.

Brown Turkey. 40 cts. each, \$4 per dozen.

White Adriatic. 40 cts. each, \$4 per dozen.

Black California. 40 cts. each, \$4 per dozen.

GRAPES.


The idea has been started by interested parties that a vine, to plant here, must be grown in some far away north section, or it is of no value for us. Nothing can be farther from the truth. All scientists will tell us that if a plant is naturalized to the country we wish to grow it in, it makes no difference, if it is well grown, where it is done.

The facts are, many plants are in growth here nine of the twelve months in the year. A grape cutting set in January will grow to the following October, and in this congenial climate it will be as large and just as well matured, and just as ready to bear a crop of fruit, as a vine grown in the state of New York is at *three years old*. I have thousands of Niagaras; the cuttings were set out last February that are now (August 10th) one-half inch in diameter, with a growth of ten feet and the season of growth only half over; and yet they are larger than any two-year-old vine I ever received from New York. While I know the New York vine was all right, I also know this *Florida*-grown vine will be all right for planting here next winter. My own observation in seeing grapes grown in several counties of the state is that white and red grapes seem better adapted to this particular section than the black ones. Of these, Niagara, so far, is in the lead. Concord, Ives' Seedling, Hartford, Delaware, Early Dawn, and some others do remarkably well.

A Mr. Farr, of Hiarwasie, near Orlando, this past season to some extent supplied our markets with the above varieties, that were certainly very fine grapes for any country.

VARIETIES:

	Each	Doz.	100
Niagara. 1-year vines	\$0 10	\$0 75	\$3 50
2-year vines	15	1 00	5 00
Delaware. 1-year vines	15	1 75	6 00
Early Dawn	20	2 00	10 00
Ives' Seedling	10	1 00	3 50
Hartford	10	1 00	3 00
Wilder	15	1 25	6 50
Concord	10		5 00
Agawam. 1-year vines	10	1 00	4 00
Brighton	15	1 25	5 50
Cynthiana	20	2 00	13 00
Norton's Virginia	20	2 00	12 00

 Write for special prices on 1,000 or 10,000 lots. Other vines that may be wanted I can supply at Northern prices.

LOCATION OF A VINEYARD.

Again the story has gone out that here in Florida nothing but "flat woods" lands would do for the vine—another misleading statement, as among the best vines and the finest grapes I have found in the state have been those on rolling pine land. I like level land here for a vineyard, but I do not care how high it may be.

PLANTING.

The ground should be thoroughly plowed and put in proper tillage. Anybody ought to know that. I believe in pretty wide planting, yet some vines require much more room than others. 7 x 7 feet is no closer for a Delaware than 10 x 10 is for a Niagara. 8 x 10 feet is a good distance to plant, the vines to be trained the ten-foot way, and the rows eight feet apart.

TRAINING.

No prescribed rule can be given as to pruning and culture; good judgment comes in here first-rate. But I can say something of a new mode (in most sections) of training that, for this all-the-year warm sunshine, I think very much preferable to the old plan.

I prepare posts 6½ feet long (and they should be rather heavy ones, 6 x 6 inches, anyway, at the top). I shoulder a 1 x 3 inch two-foot-long cross-piece, which is spiked securely. The posts are set 3 feet in the ground, being well braced, which leaves the cross-piece 3½ feet above the ground. To the middle of the cross-piece I attach a No. 12 galvanized wire, which will do to train the vines to the first season. The next spring put on two more wires, one on each end of the cross-piece, which will form a flat arbor 2 feet wide, 3½ feet above the ground. The vines being properly pruned and fastened to the middle wire, as the laterals start they will reach out and fasten themselves to the outside wires, and with proper handling the leaves will make a perfect shade for the fruit, which, in a great measure, is out of the way of the birds and is much less trouble to pick. Another point is, the ground is much better shaded by the vines in this way than by the old method of the upright trellis; the vines seem to get around much better, the sap flows easier, and a more perfect growth is secured.

MANURING THE VINES.

Like all other fruit-bearing plants here in Florida, if we expect fruit the vines must be supplied with the manurial elements that are known to produce it. It requires plenty of phosphoric acid and potash.

We get the former in bone meal, which, beyond question, is our best manure for the vine, on account of its large percentage of phosphoric acid; the potash is necessary, and it may be applied in the form of wood ashes or potash salts. Sulphate is thought by some to be best.

INSECT PESTS.

A writer once said, "Vigilance is the price of fruit," and the vine is no exception. This chapter is too short to treat at length of the different enemies of the vine. The planter must bear in mind that one beetle not destroyed in the early stages means thousands of them a few weeks later.

If I am not very much at fault, all of these bugs, we will call them, fly at night, and are attracted by a light. I have seen thousands of them destroyed in one night by means of a lamp arranged with a reflector, and a pan of kerosene suspended under it, into which they dropped, and the vines were saved from any injury whatever from that source.

The planter must bear in mind that to get perfect fruit the vines must be perfect. The training must be so that there is wood growth enough, and not too much, for the development of fruit buds, which should be kept well back to the point of first branching. Too many bunches must not be allowed, and a proper system of pinching back must be adopted, so that the leaves are developed where wanted to cover the fruit from the sun, for no one ever saw a perfect bunch of grapes ripen in the sunshine.

In this section this past season I have seen acres and acres of vines with leaves eaten full of holes by beetles, bunches of grapes hanging bare in the sun, the fruit ripening very imperfectly, shattered bunches, and the grower claiming that the cause was something lacking in the soil. It left no place for comments from me. I could only think of too much don't-know-how. (See page 43, Formula for Grape Vines.)

Every planter should provide himself with some standard work on vine culture, that he may be informed in advance how to treat the many diseases, whether they may come from insect life, parasite or fungi. Of those I will mention "Fuller's Grape Culturist" and "Hussman's American Grape-Growing and Wine-Making." These books we can supply; also others, for which see page 63.

WINE MAKING.

In all sections where grapes are grown, to make it profitable a large portion of the crop should be made into wine. So many bunches are imperfect, and unfit for the table, that all vineyardists should prepare themselves in time in that way to save what otherwise would be lost.

SURPLUS.

Of this subject we copy from *American Gardening*: "We are glad to see that greater attention is being bestowed upon the production of unfermented grape juice. We are in hearty sympathy with this move. The fresh juice of the grape is, next to good milk, perhaps, the most wholesome of all beverages. We would like to see it come into general use. It could, to some extent, be made to take the place of tea and coffee at our meals, to our great physical improvement, and at the same time afford a most welcome outlet for the surplus of the grape crop. We have already mentioned Mr. Baldridge's exhibit of unfermented Niagara grape juice at the last meeting of the Western New York Horticultural Society. We are informed that this juice, the product of 100 acres of vineyard in Erie county, is simply heated, carefully filtered, and bottled while hot; consequently it is free from all drugs or admixtures."

DEWBERRY.

The trailing Blackberry. Is native here in Florida, as well as in others of the Southern states. The fruit ripens often early in March, before extreme hot weather and our drougthy season. The fruit is larger than the common blackberry, and no fruit garden in Florida is complete without it. Plants, 10 cts. each, \$4 per 100.

PINEAPPLES.

Pineapple culture is rapidly coming to the front as one of the most important industries here in Florida. The plant is a native of tropical America, finds a congenial home here, and is being extensively planted in certain sections of our state. For many years it has been cultivated on our lower keys, but its area is fast spreading along the coast sections of both the Gulf and Atlantic, and in many sections inland.

is being very successfully grown, and this manual would be incomplete without

THE HISTORY OF THE PINEAPPLE.

(*Ananassa sativa*.)

Nicholson's "Dictionary of Gardening" says: "The pineapple is a native of tropical America; it has also become naturalized and grows in abundance in some of the best parts of Asia and Africa." After its first introduction into Europe, it was thirty or forty years before the plant was cultivated for its fruit.

DeCandolle, in his "Cultivated Fruits," remarks: "All the early writers on America mention it." Hernandez says: "The pineapple grows in the warm regions of Hayti and Mexico. A pineapple was brought to Charles V., who mistrusted it and would not taste it;" also, "it was evidently introduced into the old world after the discovery of America." Nicholson further remarks: "Little is reported of the success of pineapple culture when first attempted." (He writes of its cultivation in England under glass.) And it would seem the lack of success came from indifferent warmth in the soil, and when "bottom heat" was applied, results were better. Again: "Less than twenty years ago the importation of ripe fruits, chiefly from Azores, began in earnest to meet the increased demand; and pine-growing has gradually decreased in this country. First-class English-grown pineapples are still considered by many to be the finest and best in the world; but so long as fresh, well-swelled fruits of the Smooth-leaved Cayenne variety can be imported, to arrive little inferior in quality, it is more than likely that English pine-growing will not again be practiced to the extent it was previously."

Of culture, he writes at much length; but as it is all under glass, with steam pipes filling the ground underneath, to give the necessary "bottom heat," there is little that is of interest to us here.

It must not be expected that we are to meet with perfect success with so fine a fruit as the pineapple here, so far from its native home, in a climate that is not quite congenial to its tropical nature, without close attention to its every want. I have noted carefully the preparation of the land for planting made at many of the larger plantations in our state, and am forced to believe that our success is far below what it would be if the land was properly prepared at the start. The

common practice is to clear the land of its timber and with mattock and hoe take out all the surface roots, thus stirring the soil only 3 or 4 inches deep, which leaves it loose and mellow on top. It is then called fit to plant. My own experience would tell me that the ground was only about half prepared for the plants; that it should be thoroughly turned over with a plow, running six inches deep, and in that furrow should follow a horse with a bull tongue, letting it down six inches farther, at least. I do not want this lower soil turned up on top, but I want it broken up, so that if the roots of the plants want to go down there they can do so, and also that the moisture of the lower soil may come up. If we will thus thoroughly break up our lands, we will find that our plants will suffer less from droughts, fertilizers will do more good, and we will find far less trouble from blight spots than we now have. The planter must not think I have forgotten that often our best success with the pine is on the rocky keys, with little soil, for I have not. Neither have I forgotten that moisture is all the time coming to the surface through, and because of the porous nature of, that rock, and coming much more completely than we may ever expect it to come in our fine, compact, sand soil, prepare it as we may.

TIME TO PLANT.

As is the case with all tropical plants, they can be planted at any time of the year. It is my practice, when the plant is large enough, to take it off and plant it; or often plants are left in the shade for months after being taken off. Some growers prefer to leave plants, after being taken off, some little time, until considerably wilted—"to dry off till they get hungry," or, I will say, until the superabundant sap has dried out somewhat. Where that plan is followed, there is not the least trouble from rotting out, as is sometimes the case where they are planted as soon as taken off, and are full of sap. Planting is mostly done in the summer, as soon as plants can be obtained, as here in winter, if cold, there is no growth (as there is in tropical climes) till our summer warmth sets in. There are often some suckers that have been produced in winter. Those had best be planted in April or May.

Of the new plants, the Queens are the first to come. The larger, finer sorts come on more slowly, and often it is August or September before we get Abbakachii and Smooth Cayennes. This season I ex-

pect to plant a good many of these later ones to ripen in October and November.

A word of caution about planting. See that the plant is first carefully prepared. The operator must exert some brain power in doing this work. Don't put some ignoramus at preparing your plants. The planting also needs careful attention.

Robert Thompson in his "Gardener's Assistant," mentions over sixty varieties of pineapples, with the remark that many of them are worthless. Since this work was written several varieties have been introduced, that were not then in use. Some are valuable, while others that are new to me are comparatively worthless. I find this difficulty often. Plants are sent out that are not true to name. Within the past few days I saw quite a large plant, that was procured as Porto Rico, and lots of plants are being sold from it, as Porto Rico, while it is one of those old worthless sorts. The man sending them out is a large grower, but he has not learned growing as a profession.

I will only mention a short list of those that are considered worthy of culture, by our most experienced growers:

Abbakachii. If I am not misinformed, its origin is South America, near the mouth, of the Amazon. Mr. H. S. Kidney first saw it there, and afterward had it sent to him from there, and called it the Brazilian Pine. He lost it. Afterward the late Gen. Sanford, whose name is remembered as that of a man importing to Florida more useful plants than those obtained from all other sources, brought it from India, under the name Abbakachii. I am a little at loss to say whether our present start of this valuable Pine is from that importation, or whether our growers about Orlando may have gotten a start, as some did, from plants of it that were sent to Col. Church, I think by a brother in India. It is a strong, upright grower; leaves dark green, with a reddish center, and numerous long spines; fruit pyramidal, large, 5 to 8 pounds; in quality juicy, sweet, and with rich flavor. Fruits somewhat late in summer.

Prince Albert. A strong grower; fruit cylindrical, large, 4 to 7 pounds; flesh solid; quality good. One of our fine Pines.

Ripley Queen. This differs from Queen in having leaves of a paler green, broad at the base, often curled, disposed to lop over; is less mealy than Queen, and pips are flatter. The earliest Pine, very productive; weighs 4 to 6 pounds; in quality sweet and juicy. Pronounced by all the best.

Charlotte Rothschild. Flower lilac; fruit cylindrical or slightly barrel-shaped, with medium-sized crowns; pips large, flat, golden yellow; flesh yellow and very juicy; weight from 7 to 10 pounds.

✓ **Lord Carrington.** Flowers purple; fruit long, pyramidal and dark orange; pips medium, nearly flat; flesh pale yellow, tender, rich and highly flavored; weight from 4 to 7 pounds. A fine winter variety of the Jamaica section, first brought into notice by Mr. Miles, gardener to Lord Carrington, Wycombe Abbey, Bucks.

✓ **Black Jamaica.** Flowers purple; fruit oval, somewhat pyramidal, bronzy yellow when ripe; attaining a weight of from 4 to 5 pounds; pips medium, prominent, flattened in the center; flesh firm, rich, juicy and highly flavored; habit tall and erect. This is undoubtedly one of the best of all varieties for fruiting in winter. I will add that the late A. I. Bidwell, who imported it from England to Florida, has said to me of it that it was "in quality the finest of all the pines."

✓ **Queen.** Flowers lilac; fruit cylindrical, rich, dark yellow when ripe; pips medium, or rather small, prominent; flesh pale yellow, and remarkably juicy and sweet; weight from 3 pounds to sometimes 8 in fine specimens; leaves very short, broad, bluish green; very mealy, with strong spines widely disposed. One of the best Pineapples for general cultivation; it is unexcelled in summer and autumn by any other, but does not swell properly in winter. This is supposed to be the oldest Pineapple we have. There are several sub-varieties grown, that known as the Ripley Queen being the best. It propagates freely and ripens off its fruit quickly. Queen Pineapples will keep in good condition for three weeks after they are ripe.

✓ **Smooth-Leaved Cayenne.** Flowers purple; fruits very large cylindrical, or somewhat barrel shaped, dark orange-yellow; pips large flat; flesh pale yellow, rich and highly flavored; weight from 6 to 10 pounds; crown large; leaves long, broad dark green; almost free from spines. A very handsome variety; one of the best for fruiting in winter and early spring, when it is more juicy than any other. This is the variety, which is so largely grown in the Azores, whence the English fruiters obtain their supply of fruits from autumn until the following May.

OF PINEAPPLE CULTURE.

Our most experienced growers follow the plan of pretty close planting; 22 x 22 inches seems the proper distance, with alley ways left at 10 or 12 feet and cross alleys every 50 or 100 feet for convenience in working. Land that is so dry that plants are not liable to be too wet produces the best fruit. While the Pineapple is called an air plant, and is found wild on rocky sections of scarcely any soil, it needs water enough and plenty of manure, if your soil is not already naturally rich.

PROPAGATION.

This is by seeds, crowns, gills, suckers, and cuttings of the stem.

It is said that seedlings with proper culture may be brought to fruit at three years. Good plants are reared from crowns. I have thought crowns of some varieties are the strongest plants. We have had them to fruit at eleven months from planting. Suckers—those that come up from the roots of the old plant—are considered best. Some varieties do not sucker well. The Abbakachii often does not produce a sucker; but gills, that come about the base of the apple, are numerous. They are preferred by some growers in this state. If suckers are planted and they are large, it is best that the leaves be shortened about one-half.

Plants are prepared for planting, whether it be crowns, slips or suckers, in the following manner: With a sharp knife cut a little off the lower end, a half inch or an inch, according to the size of the plant. Then strip off a portion of the lower leaves; the operator can judge how far, by the little eyes that show, but no farther up than to expose those eyes; those little eye-like specks are the rootlets, ready to start as soon as an opportunity is given. Then insert the plant into the loosely prepared soil to the depth of two to three inches. In after culture, as the roots are mostly near the surface, I think a frequent light stirring of the soil is preferable.

FERTILIZING.

Here is, perhaps, after a proper selection of varieties, the most varied and perplexing problem of the would-be Pineapple grower. I have seen a place put out, with an expense of \$15,000 or \$18,000 an acre, and then to save money, the grower applied only about half the needed fertilizer, at the expense of one-third or one-half the crop. I repeat, don't do it. Be sure the plants have all the food they need, not only to make the plants grow, but also to make perfect fruit, both in size and flavor. Do not hunt up some one's "special Pineapple food;" but get a fertilizer that you *know* will contain 2 or 3 per cent. of ammonia, 6 or 7 per cent. of phosphoric acid, and 10 to 12 per cent. of potash, and put it on, say one-fourth of a pound to a new-set plant, and when rains have soaked that well in, repeat the dose, and keep doing it as often as the plants show they want more food.

As well may we expect "milk from a stone," as that we can get fruit that is fine-flavored, and that will carry a long distance to market, without a liberal supply of potash in some form. I have used Armour's, as also Cudahy's blood and bone with potash added, with

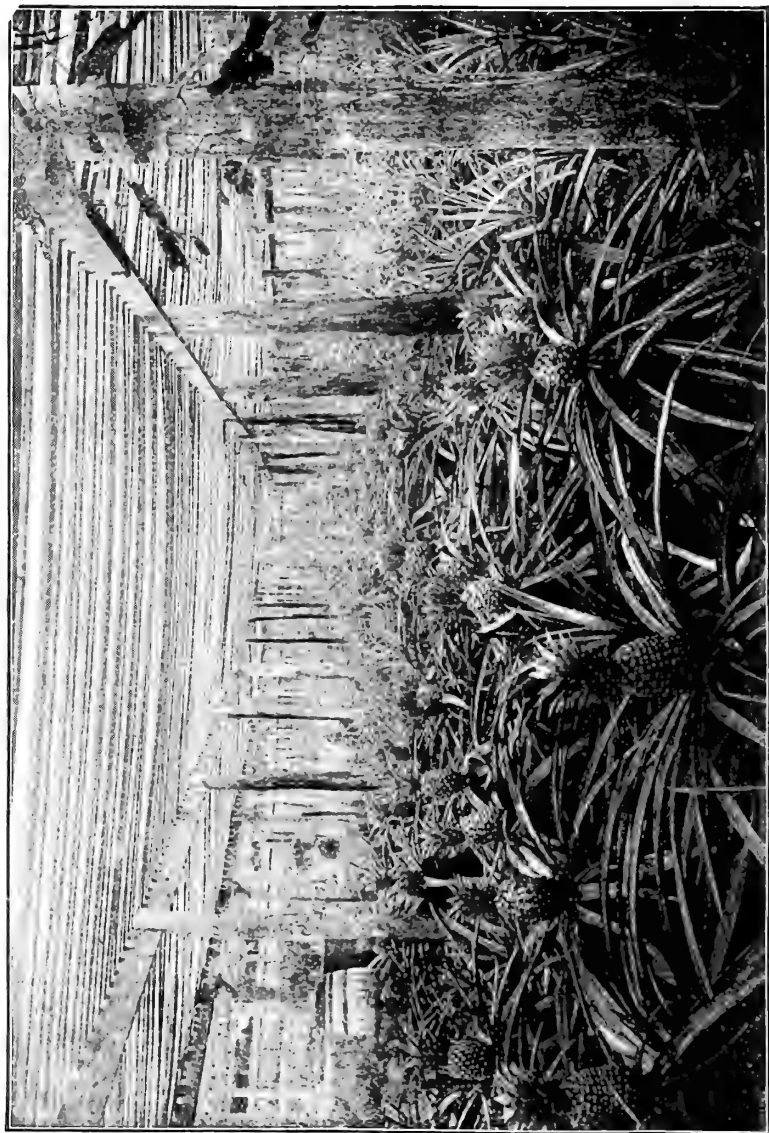
best results, but I don't quite like it for the fruiting season. There is too much ammonia for the phosphoric acid it contains. Cotton seed meal, and soft phosphate and kainit, in proper proportions, do well. A mulch of cow-dung or horse manure will make fine plants and big apples, but they won't ship well, as they contain too much ammonia for solid fruits.

A PINEAPPLE SHED.

(See Page 40.)

Without question the Pineapple, if partially shaded from the direct rays of the sun (and in this region, the interior, we are obliged to protect from cold), does better, plants are healthier, and the fruit finer, than when grown in the open ground. Our method is to use posts that will square 5 inches, 9 feet long, set in the ground 12 feet apart each way, and 2 feet deep; a 2 x 6 piece shouldered to the top, as shown in the cut; then 1 x 3-inch strips, of such lengths as to break joints on this cross-piece, and placed 3 inches apart, and we have an Orlando Pineapple shed.

In a former page I have said something of insect pests. Sometimes it seems that the finer the fruit, like the human family, the more enemies it has to contend with; and the Pineapple is no exception to this rule. From Parker Earle's annual address before the American Horticultural Society, at their meeting in San José, California, I copy: "Among the many obstacles to success in fruit-growing, the most destructive and most difficult to overcome are the myriad tribes of microscopic fungi which assail plant and tree and vine and fruit. There is no branch of our business that does not suffer serious annual losses from these obscure enemies, and no climate or section is so fortunate as to long escape their attacks. The discouraged fruit-grower, who has lost his pear trees by the omnipresent blight; his peach trees by the insidious yellows; his grape-vines by mildew, whose white shroud extinguishes all hope for fruit; his apple crop having become scabby, and his strawberry plants having been burned by rust as by a consuming fire, turns his face away from the old homestead upon which all of these horticultural curses have fallen, and travels to some new, fair land, where smiling skies and sweet winds promise him immunity from all these evils (I guess comes to Florida). For a few years these promises are kept, and his virgin crops are fair as the golden apples of Hesperides.



But his obscure enemies follow him with the certainty of an avenging fate, and they will follow him the wide world over, even within the gates of Eden itself, if he does not wage an exterminating warfare upon them."

Yes, they are at Eden now; I have seen the mealy bug and the scale on the Pineapple there. Thanks to our progressive pomologists, they are keeping up with these their enemies, and in the fight that is made with improved machines for applying the many remedies that are being found, fruit-growing is very much more successful in all our country than a decade since. Twenty years ago, when the mealy bug got on the Pine, the English gardeners had no other remedy than to take the plants up and scrub them off with brush and water. Now a solution made of bisuphite of soda, $1\frac{1}{2}$ ounces to a gallon of water, and applied with some good spraying machine, clears them off; or it may be easier to use a solution of lime and sulphur, which does the same thing; or a little slaked lime, 1 part to 2 of sulphur, sprinkled around and into, the feet of the plant, rids it of any of this parasite or fungoid life.

	Each	100	1,000
Smooth-Leaved Cayenne	\$0 35	\$30 00	\$250 00
Abbakachii	30	25 00	200 00
Ripley Queen	20	12 50	100 00
Prince Albert	30	25 00	
Charlotte Rothschild	30	25 00	
Black Jamaica	30	25 00	
Monsterrett	25	20 00	

SPRAYING TREES.

The practice of spraying trees and vines to rid them of parasite and fungoid pests is now universal in all sections of our country. I myself am running a spraying pump over all my orange nursery, as well as my pineapples. The question of the best machine for that purpose should be looked after. I give on another page a cut of Stahl's Knapsack Sprayer, for grape-vines, pineapples and any small tree work, as also his spraying outfit for large trees, and formulas for different fruits.

WHAT CROPS TO SPRAY.

Below will be found reliable formulas for preventing leaf blight and destructive insects which infest fruit trees, etc.:

Apples.—To destroy the codlin moth, canker worm and apple curculio, use one pound of London purple to 160 gallons of water. Spray the trees soon after the blossoms fall, when the apples are the size of a pea. The second application should be made a week or ten days after the time of the first, and the third application should be made in a week or ten days from the time of the second spraying. The third application is made necessary when the first is followed by a heavy rain.

In preparing London purple for use, mix thoroughly with sufficient water to a paste-like consistency; then stir into a pail of water and allow to stand over night. Strain this through a fine sieve or a coarse cloth into the distributing barrel or tank. A kerosene barrel is a convenient vessel for this purpose. Mount the barrel on a wagon. Paris green has been used in many instances, but London purple is preferred, being cheaper and easier to mix.

Plums and Cherries. PLUM CURCULIO.—Use one-fourth pound of London purple to 50 gallons of water; spray soon after the petals have fallen, and again ten days later. From experiments carried through two seasons we reach this conclusion: First, that three-fourths of the cherries liable to injury by the plum curculio can be saved by spraying as above. Secondly, that enough of the plum crop can be saved by the same treatment to insure a good yield. Thirdly, that there is no danger to health from its use. Fourthly, that spraying is the cheapest and most practical method of preventing injuries by these insects.

Prof. George Hulse, New Jersey Experiment Station: "If you will give your plum trees a thorough spraying with London purple once a week at the proper season of the year, you will secure an abundance of plums, of good fruit. Trees not sprayed will yield about 10 per cent."

Currants, Raspberries, Strawberries and Gooseberries.—Currant worms and the slugs and insects which infest raspberry and gooseberry bushes and strawberry vines may be destroyed by one ounce of powdered white hellebore mixed with two gallons of water.

Peaches should be treated very carefully. Use Paris green instead of London purple on this crop, see that it is kept constantly stirred, and do not make the mixture stronger than one ounce to 15 gallons of water. Spray late in the afternoons or on cloudy days, rather than in the hot sunshine.

To Prevent Potato Blight or Rot.—Use Bordeaux mixture, same as for grape-rot, with the exception of using more water. Dissolve six pounds of sulphate of copper in 32 gallons of water, and slake four pounds of fresh lime in 12 gallons of water. When the last mixture has cooled, pour it slowly into the copper solution, taking care to mix the fluids thoroughly by constant stirring. When the vines are about ten to twelve inches high, spray, and continue the operation every two weeks. By mixing with the Bordeaux mixture a solution of Paris green or London purple, one pound to 200 gallons of the mixture, the fungus and potato bug may be doctored at one operation.

Grape Rot and Mildew.—Use Bordeaux mixture—a sure preventive.

Bordeaux Mixture (A).—Dissolve 16 pounds of sulphate of copper in 22 gallons of water; in another vessel slake 30 pounds of lime in 6 gallons of water. When the last mixture has cooled, pour it slowly into the copper solution, taking care to mix the fluids thoroughly by constant stirring. It is well to have this compound prepared some days before it is required for use. It should be well stirred before applying.

A solution containing the ingredients in the following proportions has been recommended for general use:

Bordeaux Mixture (B).—Dissolve 6 pounds of sulphate of copper in 16 gallons of water, and slake 4 pounds of fresh lime in 6 gallons of water. When cool mix the solutions, as described above.

Treatment.—As a first step, every precaution should be taken to remove as much of the infectious material as possible. With this object in view, the old leaves and rotten berries should be carefully collected in the fall or winter and burned or buried. Trimmings should also be burned, as they often harbor thousands of the minute spores or reproductive bodies of the fungus. The Bordeaux mixture has proved beyond a doubt to be the most reliable preventive of black rot. In all cases it must be remembered that these treatments are *preventives*, and being such, it is sheer folly to wait until the enemy appears before beginning the fight.

In the spring, after the vineyard has been pruned and put in order by the plow, but before vegetation starts, spray the vines thoroughly with the Bordeaux mixture, Formula A. The object of this spraying

is to destroy any spores of the fungus that may be hidden away in the crevices of the bark. About ten days before the flowers open, spray all the green parts of the vines with the Bordeaux mixture, Formula B, taking care to wet the foliage thoroughly. Spray again with the same preparation when the flowers are opening, repeating the operation every three weeks until the fruit begins to color. The necessity for beginning the treatment early cannot be too strongly urged. For applying the remedies, spraying pumps with specially constructed nozzles are necessary. The Excelsior Knapsack Sprayer, fitted with the Improved Vermorel Nozzle, answers the purpose admirably.

To destroy woolly and apple aphid and bark lice, sucking species of insects, including chinch bugs, squash bugs, plant lice, leaf hoppers, aphid and bark lice—Use the kerosene emulsion.

Kerosene Emulsion is one of the most useful of the insecticides, and may be easily prepared as follows: Dissolve one-half pound of hard soap (best whale oil soap) in four pints of water by boiling. When the soap is all dissolved, remove from the fire and add eight pints of kerosene, and agitate the whole briskly until a stable mixture is obtained. This is best done by using a force pump and pumping the mixture with force back into the vessel that contains it. The emulsion may be diluted to the desired strength and used at once, or it may be allowed to stand and be used from when needed. The strength ordinarily used is prepared by diluting one part of the emulsion in ten or twelve parts of water, which makes the kerosene about one-twentieth part of the whole.

Hop Lice.—From *Farm and Home*, by Prof. J. A. Lintner, State Entomologist, of New York. The attack of this species should be closely watched by hop-growers, and if it proves formidable, the following is the best remedy that can be used: With the aid of a good force pump, go through the yard and spray the under side of the leaves with kerosene emulsion, which is prepared by thoroughly mixing, by the aid of a force pump, two gallons of kerosene with a hot solution of one pound of soap in one gallon of water. One part of this substance (a thick substance) should be diluted with twenty or twenty-five parts of water. With this preparation the injury to the foliage was none at all, and all the lice were killed. One hundred gallons of this wash would cost about 30 cents. With this treatment the ravages of the hop-louse may easily be prevented. In future do not charge the loss to Providence.

To Prevent Fungous Diseases affecting fruit trees, such as apple scab, twig blight, bitter and black rot of apple, pear and quince leaf blight, black knot on the plum and cherry, rot and leaf spot disease of plum and cherry, and fungous diseases and rust affecting the raspberry, blackberry, currant, gooseberry and strawberry:

Spray with the Bordeaux mixture, which is prepared as follows: Dissolve 6 pounds of sulphate of copper (blue vitriol) in 16 gallons of rain water. In another vessel slake 4 pounds of lime in 6 gallons of water. When this has cooled, pour it slowly into the copper solution, being careful to mix the fluids thoroughly by constant stirring. This mixture can be diluted to one-half the above strength by adding more water, if desired, for preventing fungous diseases, and many parties have had satisfactory results by diluting in this manner. Yet my experience has proved to me that it is best to use the original Bordeaux mixture, and I think that the difference in cost will be more than made up by the increased thrift and vigor of the trees, vines and foliage.

It must be remembered that insects and fungous diseases are of an entirely different nature. Insects are very often blamed for injuries which are really caused by parasitic fungi. The effect of judicious spraying with fungicides is to check the dropping of immature fruit in the spring; to cause it to grow to larger size and more free from blemishes; to cause it to hang better to the tree when ripening; to cause it to take on higher color in ripening, and to improve its keeping quality. The effect of scab and other fungous diseases is to cause a large proportion of the fruit to drop when quite small; to greatly disfigure and reduce the size and market value of that which matures, and to injure the vitality of the tree by causing a premature falling of the foliage.

For spraying to prevent apple scab, twig blight, bitter or black rot and other fungous diseases, it should be borne in mind that spraying with fungicides is preventive rather than remedial, hence the first application should be made early in the season. Results obtained the past season indicate that early spraying is the key to success, and I strongly urge this point. The first application should be made before or about the time the leaves open; that is, when spraying against fungous diseases, for which purpose you want to use an application of Bordeaux mixture. The Bordeaux mixture alone wants to be used at this early spraying, and particularly if work is to be done before

the leaves open, but if delayed until a few days after the buds start, and worms are known to be present, it is well to add Paris green or London purple to the Bordeaux mixture in the proportion of one pound of the London purple or Paris green to every 160 gallons of Bordeaux mixture. The second application should be made immediately after the blossoms fall. This application should not be delayed several days, and it is well to commence as soon as a greater part of the blossoms have fallen. There is no necessity of commencing before this time, nor is it advisable. In this application a combination of fungicides and insecticides should be used, i. e., Bordeaux mixture and Paris green or London purple, the insecticides being to destroy the insects. The third application should be made a week or ten days after the time of the second, and with the same materials. The fourth and last application for the season should be made in about ten days from the time of the third, and with the same materials. Some parties carry the work on later in the season, and have sprayed as often as six or seven times, but the success with four sprayings, when two mixtures are used as above stated, has always given satisfactory results, and it seems safe to advise that number of sprayings. It is important, however, to observe closely the time advised for the first and second sprayings, since success depends more upon those than the subsequent ones.

A combination of Paris green or London purple and the Bordeaux mixture is not only harmless to the foliage, but saves a separate spraying for the insects, which can be very easily overcome by mixing London purple or Paris green with the Bordeaux mixture in the proportion of one pound to 160 gallons, and spray as above directed. The question which compound to use in connection with Paris green or London purple as a preventive for both the apple worm and fungous diseases, to be applied at the same time, is settled; it is now an established fact that the Bordeaux mixture is the proper and best of any that have been recommended for general use.

If the orchard is not affected with scab or fungous diseases, and you want to spray simply for the insects, such as the codlin moth, canker worm or curculio or other insect pests, use London purple in the proportion of one pound to 160 gallons of water, using rain water for this purpose, as directed on former page.

MISCELLANEOUS.

CHERRIES.

Surinam or **Cayenne Cherry.** A beautifully ornamental evergreen shrub, producing a profusion of very pretty scarlet red fruits in spring, the size of a large cherry. A good acquisition to our long list of Florida fruits. Trees, all pot-grown, 35 cts. each, \$3 per dozen.

BANANAS.

Cavendishii and **Hart's Choice.** 25 cts. each, \$2 per dozen, \$15 per 100.

MANGO.

(*Magnifera Indica.*)

DeCandolle says: "It is impossible to doubt that it is native of the south of Asia or the Malay Archipelago." The fruit is something the color of the apricot. The tree belongs to the tropical class of plants, but will withstand some little frost. There are sections in Florida where it is extensively grown. Our market here at Orlando has been to some extent supplied this past season with this fruit grown near here. The tree grows to a large size; in form it is most grandly beautiful; its leaves are large, glossy and dense. It is a rapid grower, and bears at four to five years from seed. In 1885 from one tree at Pinellas \$75 worth of fruit was sold. It was killed by the big freeze in 1886. I have only one variety in cultivation—the best, Apricot Mango. Trees are pot-grown. 50 cents each.

EUGENIA JAMBOS.

(*Rose Apple.*)

A beautiful evergreen tree; a native of the East Indies, but has long been grown in the West India Islands; the leaves are long and narrow, and resemble those of the oleander; the new growth is wine-colored, like the mango; fruit resembles a large crab apple, is white or yellowish, with red flush on one side; is rose-scented, very fragrant, with apricot flavor; sprouts readily from the root if killed down. 75 cts. each; plants five feet high, of fruiting size, \$2 each.

ANONA.

(*African Custard Apple.*)

✓ **Africana.** 50 cts. each.

Cherimolia (*A. tripetala*, *A. Humboldtiana*). The Cherimoya or Jamaica Apple. (Spanish, *A. Cherimoya*.) This delicious fruit varies from the size of an apple to six inches in diameter. In its native

home (Peru) it is said to sometimes attain a weight of from 14 to 16 pounds. It has proved hardy in the milder coast regions of Spain (Von Mueller), and is quite extensively grown, with slight protection, for the markets of Marseilles and Paris. A more upright grower than the sugar-apple; fruit generally with a bright red cheek, though this is wanting in some specimens. Grown commonly in Key West under the name of "Jamaica apple." Main crop of fruit ripens in April and May. 50 cts. each, \$5 per dozen.

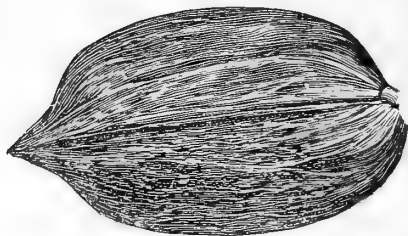
PECANS.

One of our best nut-bearing trees. It finds a congenial home in the whole South, from St. Louis to Florida keys. Trees here at Orlando—seeds were planted on high pine land, seventeen years ago—have been bearing annual crops for the past ten years.

Texas Paper-Shell. Trees 4 to 5 feet, 40 cts. each, \$3.50 per dozen, \$25 per 100; 3 feet, 25 cts. each, \$2 per dozen, \$15 per 100.

POMEGRANATES.

Flowering. 50 cts. each.



PECAN,



GIANT BAMBOO.

SHADE TREES.

MAGNOLIA.

Grandiflora. From the Mississippi Valley; a tree much superior to our native magnolia. Flowers large, double, pure white. Trees, 2 feet, \$1 each.

Fuscata (Banana Shrub). 50 cts. each.

TEXAS UMBRELLA.

Trees, 4 to 6 feet, 40 cts. each, \$4 per dozen; 2 to 4 feet, 25 cts. each, \$2 per dozen.

GREVILLEA ROBUSTA.

(*Australian Oak, Silk Oak.*)

A fine fern-leaved evergreen, growing in its native country to 120 feet in height. One of our most beautiful shade trees, producing, through May and June, a profusion of creamy pink flowers. There are several trees about Orlando that have been in blossom the past two seasons. Trees are all pot-grown. 40 cts. each, \$4 per doz., \$25 per 100.

HIBISCUS ROSA-SINENSIS.

(*Chinese Hibiscus.*)

These showy, handsome and quite well-known plants succeed admirably here in the open ground, and are among the best of our lawn and garden plants. Their gorgeous flowers are produced in profusion nearly the entire year. While they will stand but little frost, the loss of the tops there by seems in no way detrimental to them, and they grow right off again as vigorously as ever. If good-sized plants are planted out in May at the North, they bloom in a short time, and continue in all their splendor until frost. Perhaps no more satisfactory plants for show can be secured, and their low price should not be considered as placing the plants in the category of cheap plants, or those not worth attention.

GOLDEN ARBOR-VITAE.

Thuja Orientalis aurea (*Chinese Arbor-Vitæ*). Branches short, slender, assuming, during winter and spring, a golden-yellow color; a very neat, dwarf, dense bush; the finest of its class for the extreme South. 2 feet high, 50 cts.; 3 feet, \$1.

GIANT BAMBOO.

(*Bambusa*, from *Bambu*, the Malay name.)

Stem very stout, rising like a beautiful column to some fifty or sixty feet, the whole presenting the appearance of a huge plume of feathers. Native of India. (See page 49.) Plants \$1 each.

EUPHORBIA PULCHERRIMA.

(*Poinsettia pulcherrima*.)

A well-known greenhouse plant, native of Mexico, grown for the scarlet bracts which surround its flowers, which are freely produced in winter, and which remain bright for months at a time. 50 cts. each.

OLEANDER.

Double White	Each \$0 50
Purplish Crimson	50

The above plants are rare sorts, and are the most beautiful of this class of plants.

POINCIANA REGIA.*(Royal Poinciana.)*

The Flamboyante of Madagascar and West Indies. One of the most beautiful flowering trees of the tropics, but unfortunately too tender to stand much frost. It is of very rapid growth, and if it should be killed before blooming, it would still have amply repaid for all the care bestowed upon it, in its immense decoumpound leaves. We have plants all sizes from 6 inches, at 15 cts. each, to 10 feet, at \$1 each.

MISCELLANEOUS PLANTS.

GARDENIA FLORIDA FL. PL.*(Cape Jessamine.)*

Far too well known to need any description; hardy throughout the lower South. Of late they have become fashionable at the North; may their popularity increase! They are among the loveliest flowers grown. Small, well-rooted plants, 15 cts. each, \$1.50 per dozen; 12 to 18 inches, 30 cts. each, \$3 per dozen; 2½ to 3 feet, \$1.

CINNAMOMUM.

Camphora (*Camphora officinalis*). (Camphor Tree of China and Japan.) This tree, together with several closely allied species, yields the camphor gum of commerce. The tree is a handsome, broad-leaved evergreen, hardy throughout most of the Gulf states; the leaves and berries are very aromatic. 25 cts., 50 cts. and \$1 each.

Zeylanicum. (Cinnamon Tree.) The bark from the young shoots of this tree is the cinnamon of commerce. Small plants, 75 cts. each; extra large, 4 feet, \$2 each.

FICUS ELASTICA.

The true Rubber Tree of India. Plants 75 cts. and \$2 each.

LILIUM. (LILIES.)

"Innocence, bride of man's childhood,
Innocence, child beloved, is a guest from the world of the blest—
Beautiful; and in her hand a lily."

In rich, moist land many of the lilies succeed admirably in Florida. Care should be taken that they have thorough drainage; some shade is

also beneficial. Lilies, when once established, dislike to be moved often.

Harrisii (Bermuda Easter Lily). Pure white, fragrant, and very free flowerig; closely resembles the Longiflorum variety. 25 cts. each.

Tigrinum (Tiger Lily). 20 cts. each.

GARDEN HYDRANGEAS.

Cœrulea. Flowers bluishrose. Price of Hydrangeas, 30 cts. each*

AMARYLLIS.

Prince of Orange. Fine orange-scarlet. 50 cts. each.

WATER HYACINTH.

A very curious and interesting plant for the aquarium or amateur garden. I find it to succeed admirably in a ditch where swamp muck had been taken out, the roots reaching down into the muck somewhat. This variety in our collection is new and rare; unfortunately I have lost the name; in color blue, shaded with purple, with gold center. Bulbs, 50 cts. each.

MONTEREY CYPRESS.

A hardy, medium-sized tree, of great beauty and of extremely rapid growth; 50 to 60 feet in height; foliage dark green. Native of south California. Trees are pot-grown, \$1 each.

AGAVE RIGIDA SISALANA.

(Erroneously known as the "Maguey" plant in parts of Florida.) The Sisal Hemp. *Cabulla* or *Sosquil Jenequin* of Central America and Yucatan. Producing one of the most valuable cordage fibres for rope, cordage, etc. Introduced from Yucatan by Dr. Perrine in 1838; now naturalized and found wild in some localities on the keys. 30 cts. ea.

SANSEVIERA ZEYLANICA.

The Bowstring Hemp. As a fibre plant this plant has been known and prized in India from remote antiquity under the name of *Murva*. It is extensively cultivated in Ceylon, India and the West Indies, where it grows to a height of 5 or 5 feet. Leaves long and sword-shaped, mottled green and white. Very beautiful. 25 cts. each.

TRADESCANTIA.

Discolor. One of the most effective plants for the open ground here that we have ever seen. Equally valuable as a specimen, pot or vase plant. Upright-growing, like the agaves, reaching a height of

from twelve to eighteen inches; leaves sword-shaped, rich green above, bright purple beneath. Sprouts from the roots when killed down, but is easily protected in case of a hard freeze. 25 and 50 cts. ea.

Multicolor. A trailing sort, with leaves variegated white and pink. 15 cts. each.

Zebrina. Striped purple and green.

Price of *Tradescantias*, except where noted, 10 cts. each.

SELAGINELLA.

These curious plants are nearly always grown with ferns, and require the same treatment. They are remarkably beautiful.

Emiliana. (New.) Upright, dense growth. 15 cts. each.

Martensia. (From Mexico.) Stems trailing on lower half, the upper supported by root fibres. 15 cts. each.

Stolonifera. Creeping. 15 cts. each.

Cuspidata. 15 cts. each.

FERN, PTERIS SERRULATA.

10 cts. each.

IPOMOEA SINUATA.

Flowers white; leaves deeply parted. Evergreen twiner. 15 cts. each.

MANETTIA VINE.

Flowers orange and red. An elegant house plant, being constantly in bloom.

ALLAMANDA, GOLDEN BELLE.

Superb yellow trumpet-like flowers; very decorative. 50 cts. ea.

FANCY COLEUS.

Annie, Golden Bedder, Garfield (highly colored), **Progress** (spotted), **Exquisite, Charm, Sport, Othello, Red Cloud.** All are 10 cts. each.

CALADIUMS.

Argyrites. Fancy foliage. 20 cts. each.

Wightii. 20 cts. each.

BEGONIA.

Rex. (Ornamental-leaved.) This class of plants is grown for their large, handsome leaves, which are banded and flaked with silvery white, brilliant greens and reds, many having a metallic lustre; very desirable for house culture, as they thrive where there is but little direct sunlight. We have a choice collection of three varieties.

which we cannot describe for lack of room, except the following, which is very peculiar. 15 cts. each, 4 for 50 cts., 7 for \$1.

Countess Louis Erdody. One of the handsomest and most peculiar of the Rex class. The large leaves have a most peculiar curl at the base; the colors are finely blended. 20 cts. each, 3 for 50 cts.

BRYOPHYLLUM CALYGINUM.

A curious, rapid-growing succulent. Flowers green, in form of bladders. One of those strange plants that are propagated from leaves. 10 cts. each.

CHRYSANthemum.

Our plants are seedlings from a California collection of the finest sorts. They do well in Florida, and will greatly please when well-grown. 20 cts. each.



BEGONIA REX.



ROSES.

The Rose has for all time stood at the head of the list as the Queen of Flowers.

" One spot exists, which ever blooms ;
Even in that deadly grove
A single rose is shedding there
Its lonely lustre ; meek and pale
It looks, as planted by despair ;
So white, so faint, the slightest gale
Might whirl the leaves on high ;
And yet, though storms and blight assail,
And hands more rude than wintry sky
May wring it from its stem, in vain !
To-morrow sees it bloom again."

Successful Rose culture in South Florida has been heretofore a difficult problem, only on account of a want of adaptability of many of our most valuable kinds to this peculiarly trying soil and climate. It

is a law of physical botany that a plant must be naturally adapted to the soil and climate to succeed.

The Tea Roses, as a class, are very much lacking in that respect, when planted in our sandy soils. They are our most desirable roses, as they afford the greatest variety of shades and colors, and constant bloom. When grown from slips, the usual way, in greenhouses, and planted in South Florida soil, within a year they will, nine cases out of ten, die or "lead a sickly life at best." This is because they are in their physical organization unsuited to our peculiar soil.

By selecting for a stock our native Rose, which is vigorous and perfectly naturalized, and congenial in flowering habits, as well as uniting readily with other roses when grafted or budded upon it, this difficulty is entirely overcome. This stock we find in the Arbor Rose, which in every way seems specially suited to our needs. Not only do these weaklings, when budded upon it, seem to take much of the vigorous nature of its new parent, but they become more prolific in bloom.

Price, Marechal Niel, 50 cts. each, \$5 per dozen; all other kinds, 35 cts. each, \$3 per dozen.

TEA ROSES.

Bride. The finest rose offered; deep creamy white.

Climbing Devoniensis. White, tinged with pink.

Chromatella. Clear, bright yellow.

Comtesse of Garth. Silvery pink.

Catherine Mermet. Clear, shining pink.

Devoniensis. Magnolia Rose; creamy white, with rose center.

Duchesse de Brabant. Salmon-pink; one of the best.

Etoile de Lyon. Chrome-yellow.

Hermosa. Beautiful clear rose

Isabella Sprunt. Bright canary yellow.

Jean Pernet. Yellow, suffused with salmon.

James Sprunt. Deep cherry red; our finest red climber.

Louis Philippe. Rich, dark, velvety crimson.

Lamarque. Pale canary yellow, nearly white; climber.

La France. Silver-rose, shaded with pink; one of the very best.

Luxembourg. Rose-carmine on buff ground.

Marechal Niel. Rich, creamy yellow; often tinged with carmine.

Mad. Ristori. Pale flesh color; creamy center.

Mad. Lambard. Rosy bronze; passing to salmon.

Mad. Louis Henry. Silvery rose, shaded buff and salmon; climber.

Mad. Welche. Amber-yellow, shaded with crimson.

Mad. Schwartz. Pure white, tinged with yellow.

Marie Van Houtte. White; slightly rose-tinged petals.

Papa Gontier. Bright red.

Perle des Jardins. Clear golden yellow.
Reve d'Or. Climbing Safrano; coppery yellow.
Souv. de Paul Neyron. White, tinged with golden yellow.
Safrano. Coppery yellow; one of the best.
Washington. White.
Zelia Pradel. White, with yellow center; one of our best.

HYBRID PERPETUAL ROSES.

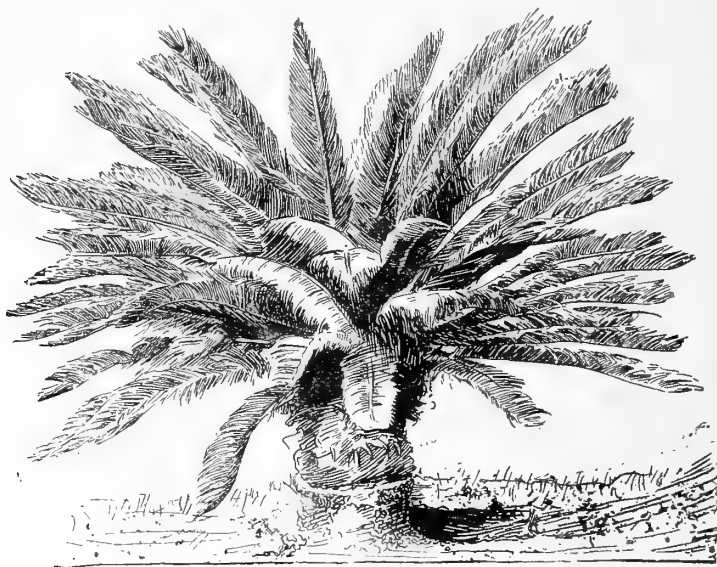
Gen. Jacqueminot. Violet-scarlet.
Her Majesty. Flower very large; bright red.
La Reine. Deep rose.
La France. Delicate silvery rose.
Mad. Plantier. Pure white.
Paul Neyron. Bright shining pink.
President Lincoln. Deep red rose.
Prince "Camille de Rohan." Deep velvety crimson.
Prince Albert. Pink; peculiarly shaded.

We are all the time adding to our stock, and the coming winter we will have several others of the new and rare acquisitions.

PALMS.

In the whole world of plants, the palm stands pre-eminent. Linnaeus called palms the "princes of the vegetable kingdom," and they have held the throne of royalty for centuries. The cultivation of palms is one of the most satisfactory branches of floriculture; and they are, without doubt, the most beautiful and graceful subjects for house culture at the North, or for the grand effects that may be produced by grouping the more hardy species on our Southern lawns. Palms are not hard to grow, and require a great deal less care than the majority of house plants. Give them a deep pot or tub to accommodate the long roots; have this amply drained and filled with rich soil, and re-pot once a year; give partial shade and plenty of water while the plant is growing, with an occasional sponging of the leaves to keep them clean and bright, and no difficulty will be experienced in growing small plants into fine and valuable specimens.

High prices have deterred many persons from purchasing these plants, and it is now our object to place a grand collection of them before the public at prices at which all may indulge their fancy for



CYCAS REVOLUTA.

them, and at no greater outlay than for common plants. True, we grow some very rare and high-priced ones, but these are only offered to persons who can afford to buy them. Many of the low-priced ones are just as handsome, and from our stock of over a hundred thousand plants we can always make satisfactory selections. At the following prices, plants are sent free by mail, except when two prices are given; the higher price will indicate a much larger size, and such as can be sent by express only. Plants of the smaller sizes do not, in most cases, show their true characteristic leaves, but will be strong, well-rooted, pot-grown plants, two or more years old, and if not already showing their true leaves, they very soon will.

Areca lutescens (*Chrysalidocarpus lutescens*). India. One of the most elegant and useful palms; the rich, shining green foliage is

very firm in texture; the plant is also a rapid grower, and with good treatment a small plant can soon be grown into a fine specimen. Our young plants all show character, and are unusually fine; we heartily recommend them. 60 cts. to \$3 each.

Cocos Weddelliana. South America. One of the most elegant and graceful palms that has ever been introduced; well-known in every collection of greenhouse plants, and one of the most useful to the florist or for ordinary house culture; it easily endures the hardships falling to house plants. Beautiful little plants, 60 cts.

Chamærops excelsa (*Trachycarpus excelsus*). A quick-growing and very desirable palm. 20 cts. each.

Kentia (Howea) Belmoreana. The Curry Palm of Lord Howe's Island. This is always enthusiastically received when seen, on account of its elegance and its well-furnished growth. An elegant species, in which the pinnae are beautifully curved and reflexed. Very fine plants, showing true leaves, \$1.50 to \$4 each.

Cycas Revoluta. The so-called Sago Palm; Japanese Fern Palm. One of the best known and handsomest of the order, and as it is quite hardy, it is well adapted for the sub-tropical garden, where its dark green, glossy leaves make it a very conspicuous object. The illustration herewith is no exaggeration of the specimen plants we offer. The small plants have handsomer leaves, but fewer of them. Nice plants, 40 cts. each; larger, with 3 to 4 leaves, \$1 each; half specimens, 5 to 7 leaves, \$2.50 each; half specimens, 10 to 12 leaves, \$4 each; good specimens, 12 to 15 leaves, \$7 each; large specimens, with trunks 16 to 24 inches high and 24 to 30 inches in circumference, with crowns of 20 to 40 leaves, \$15, \$20 and \$25 each.

Latania Borbonica (*Livistonia Sinensis*). Southern China. One of the most popular palms in cultivation for decorative work, and, as it is quite hardy, it is a very suitable plant for open air culture in Florida. From this species are obtained the well-known palm-leaf fans of commerce. It is advisable with this, as with most other palms that are to be planted in the open ground, to give partial shade while plants are small. After they are once thoroughly established, they will grow rapidly, and finally attain a large size. They succeed admirably as pot plants, and will thrive wherever a rose or geranium will, and with some attention the smaller plants will soon grow into fine specimens. Small plants, 15 cts. each; second size, 35 cts. each; large plants, from 6 and 7-inch pots, \$3 to \$3.50 each; large specimens, in 16-inch tubs, price on application.

Phoenix dactylifera. The well-known Date Palm of Northern Africa and Southern Asia. Trees of this species have produced fruit for years on Cumberland Island and at St. Augustine. They require, usually, about ten years to come into bearing, but there are cases where they have produced fruit much sooner. 15 to 25 cts. each, \$12 to \$20 per 100.

Seaforthia elegans (*Ptychosperma Cunninghamiana*). From Queensland and New South Wales. (Australian Feather Palm.) An elegant and very useful greenhouse palm. 20 cts. each, 3 for 50 cts.; large plants, 50 cts. each.

AURANTIUM POMELO.

Believing, as I do, that it is the most valuable fruit of the citrus family, and thinking it was possible that I was partial in that belief, I have thought to send it out to different horticulturists of our own and of some of the Gulf states, and the very high praise given it in every case justifying me in my first opinion, I here publish what a few have said of it:

J. A. Icenhour, of Paola, writes, Feb. 25th, 1890: "In regard to the fruit, it was elegant. I think one can say of it, *facile princeps*, and not overdraw it. The Satsuma is a great favorite, and with the *Aurantium pomelo* I hold a pair that will beat three of a kind."

F. H. Griffing, Deland, writes, April 6th: "I find your favor in the shape of two nice samples of *Aurantium pomelo*, which Mr. Kingsley and myself and several others have tested, much to our satisfaction. We pronounce it simply *delicious*; please accept hearty thanks."

Levi Risinger, Sorrento, writes, March 20th: "The *Aurantium pomelo* arrived in due time. I tested them with Rev. Walker, of Tangerine, and Rev. C. A. Lander, of Messina. We found them in quality very much superior to the grape-fruit. The size is much preferable, as they are not so large, and the skin being very thin, gives them more eating matter in proportion to the size. We found the flavor to partake of both the orange and the grape-fruit. I am convinced that as the fruit becomes known many groves will be planted; at least no place will be complete without giving this fruit a place."

Mr. D. Redmond, of St. Nicholas, writes under the date of July 29th, 1890: "The samples of *Aurantium pomelo* reached me in good condition, and I cannot but regard it as a very great acquisition. The flavor is very piquant, stimulating and refreshing."

Mr. Curtis, in *Times-Union*: "Mr. James Mott, of the Orlando Nursery, recently sent us a specimen of a new citrus fruit of which, we believe, he has a monopoly at present. It is a hybrid between an orange and pomelo, or grape-fruit, comprising characteristics of both. It originated in Orange county, from a seed of Dummit orange. In size it resembles an orange; in color and internal structure, the grape-fruit or pomelo. In flavor it presents a happy combination of both. The fruit sent us was divided among four good judges, who agreed in

pronouncing it a delightful fruit and a great acquisition to our pomology."

From *Times-Union*, April 28th, 1890: "To the Agricultural Editor of the *Times-Union*:—The rapidly increasing popularity of the grapefruit has naturally led fruit growers to the selection of the best varieties. I have lately eaten one of the *Aurantium pomelo* presented me by Mr. James Mott, a nurseryman of Orlando, and the introducer of the fruit. I must admit that it is as far ahead of the common pomelo as a sweet orange surpasses the bitter-sweet. In fact, it bears about the same relation to the ordinary variety. It is evidently a mixture of sweet orange and pomelo. It is not quite so large, has a thin skin, is free from bitter, and the pulp is very tender and juicy. I sampled the fruit in December and February, and can testify that it is away ahead of grapefruit at all seasons, but attains its perfection in April, at which season it will be most appreciated, coming in with the Tardiffs. In appearance of fruit and foliage it is distinctly like the pomelo, the former having a deeper color, and the latter only lacking somewhat the steel-like luster of the common variety. My opinion is that it is destined to take a high place among citrus fruits.

"I. McQUEEN AULD."

From *Times-Democrat*, N. O.: "Agricultural Editor of the *Times-Democrat*:—Your valuable paper of the 21st has a clipping from a California paper, 'The Pomelo or Grape-Fruit.' The common 'shaddock or grape fruit is coming more and more into use, not only here at home, but is sought after in Northern markets. The fruit acid it contains, and the bitter principle of its skin, which is also to some extent blended in its juice, is admitted to be the most wholesome fruit acid known, especially for hot climates. I have heard it remarked that the God of nature placed it here for man's wholesome, as well as luxurious food.

"The writer remarks that in foreign countries it is never known to cross with other citrus fruits, which, so far as I have been able to find out, is true of it. Ours, here in Florida, is a peculiar climate, and there are many freaks in horticultural nature coming about that the best of us cannot account for. There are instances of fruits crossing here that scientists of other countries have told us could not be, which is, likely, true of other sections. That the pomelo here is crossed with the orange there need be no question. I send you samples of one that has been named '*Aurantium pomelo*,' that is known to have come from a Florida orange seed, a description of which is here given:

"*Aurantium pomelo* is a chance seedling originating in Orange county from an orange seed procured from the noted Dummit orange grove, on Indian river. It is as much orange as grape-fruit—a hybrid, beyond question. The most valuable acquisition to the citrus family yet out. Fruit smaller, skin thin, less rag (or core); in quality sweet and very fine, with just enough of the bitter principle that we know it is of the grape-fruit.' There are several other instances of this hybridization in our section. I have thought this one partakes more of the orange, both in color and pulp as well, being sweeter to most tastes. You can judge, Mr. Editor, yourself of its value.

"Orlando, Fla., March 2d, 1890.

JAMES MOTT."

[The specimens alluded to by our correspondent came safely to hand, and in good order. They were tested by some of our most extensive orange growers, and pronounced a decided acquisition, several thinking them to be decidedly better than any variety of orange to be found on the New Orleans market at this season of the year. The slightly bitter flavor, which in this instance was scarcely perceptible, the sprightliness of the juice, containing only sufficient acid to make it palatable, could not be classed as objectionable. Color but slightly darker than the ordinary shaddock or grape-fruit. Solid and juicy, with only a moderate amount of core. We consider this fruit worthy of an extended trial, especially in the southern limit of citrus culture in Louisiana and Mississippi.—ED.]

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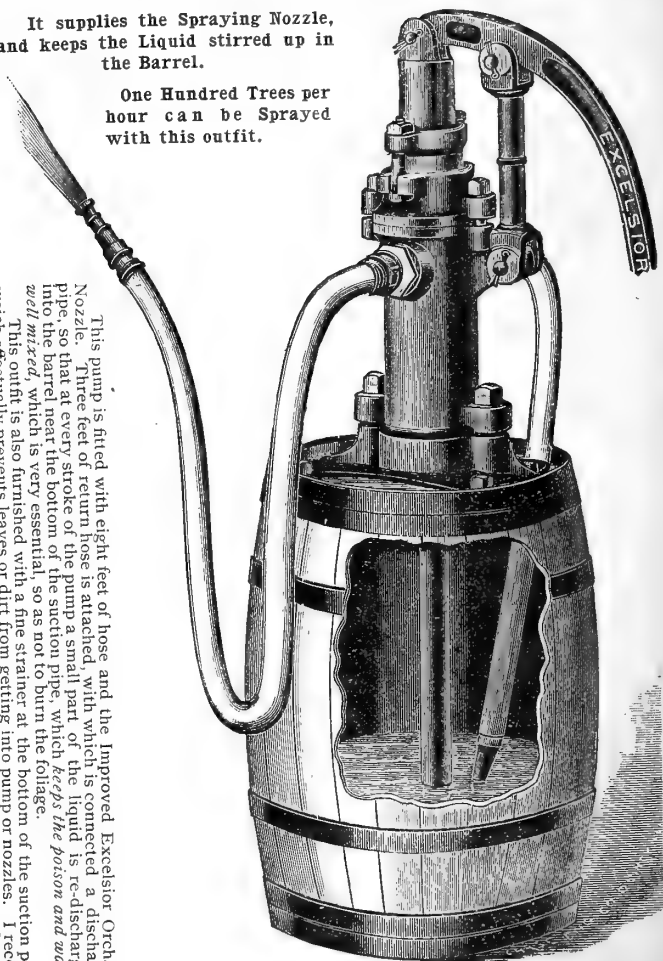
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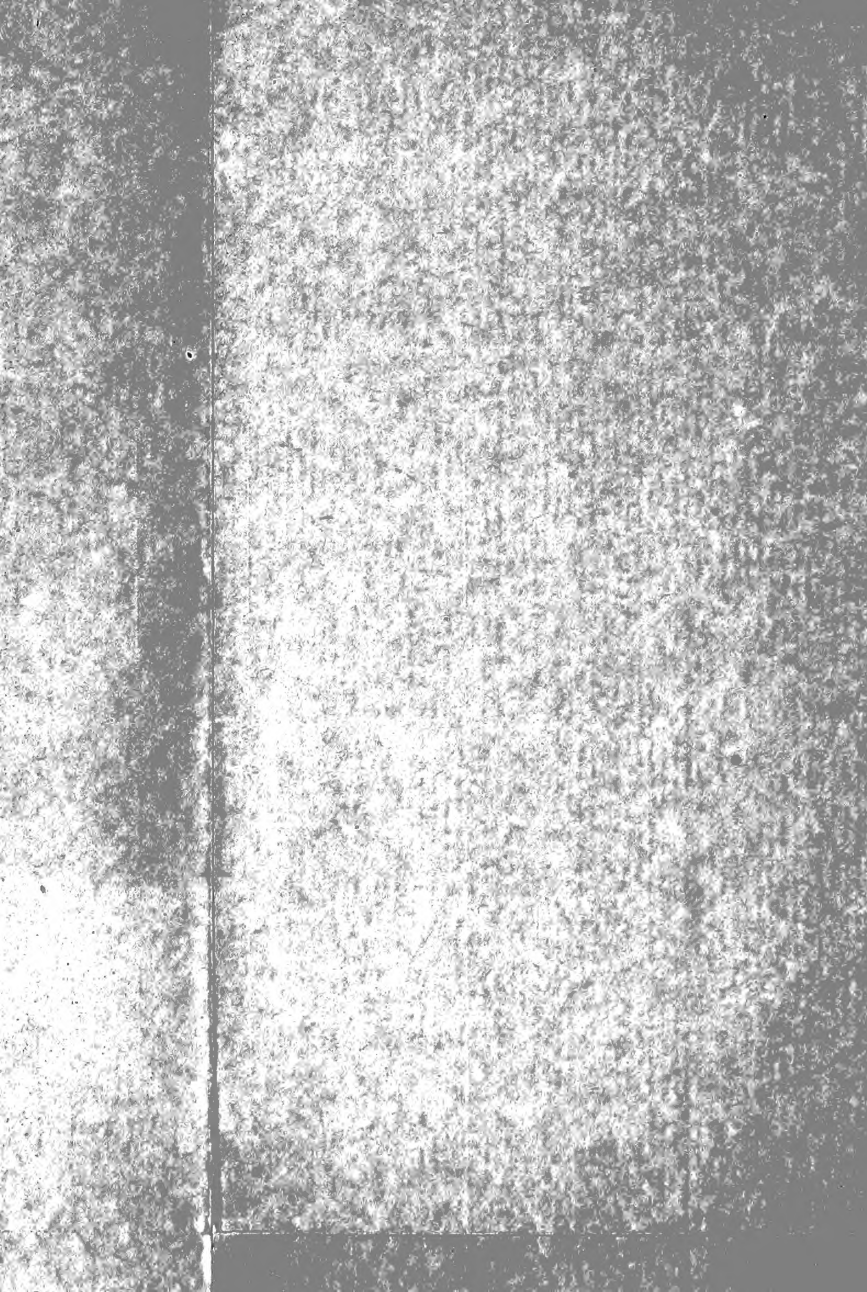
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